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An Investigation Into The Elements Which
Constitute Good Teaching In The Elementary
School

AN INVESTIGATION INTO THE ELEMENTS WHICH
CONSTITUTE GOOD TEACHING IN THE
ELEMENTARY SCHOOL

BY

JOSEPH HENRY JOHNSTON
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Submitted in Partial Fulfillment of the Requirements for the

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPER-
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W. V. Bagley
In Charge of Thesis

W. V. Bagley
Head of Department

Recommendation concurred in:*

James W. Garner
Lucy M. Whipple
Madison C. Butler
H. A. Hollister

Committee
on
Final Examination*

*Required for doctor's degree but not for master's.

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AN INVESTIGATION INTO THE ELEMENTS WHICH CONSTITUTE GOOD TEACHING IN THE ELEMENTARY SCHOOL

INTRODUCTION

Much time and effort have been expended in recent years in attempts to determine the factors that are involved in teaching efficiency. These attempts are a part of the general movement that has been evident for some time in commerce and the industries. This scientific or analytic attitude which has only recently been adopted to any extent in the field of education, has taken three principal forms. In some instances the attempt has been made to measure the total efficiency of the teacher¹. Sometimes the stress has been put entirely upon the worth of the teaching, as determined by observation of classroom work². In still other instances attempts have been made to determine the results of the teaching upon the pupils, by means of objective tests in particular subjects³.

The present study, then, is not an approach to a new problem, but it is an attempt to find a better approach to an old

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- ¹E. C. Elliott: A Tentative Scale for the Measurement of Teaching efficiency. The University of Wisconsin, 1910.
William Carl Ruediger and George Drayton Strayer: The Qualities of Merit in Teachers. Journal of Educational Psychology, May, 1910. Vol. I.
A. C. Boyce: Qualities of Merit in High School Teachers. Journal of Educational Psychology, March, 1912. Vol. 3.
Ernest C. Witham: Measuring Scale for Teacher Measurement, Teachers' Yearbook, 1915.
- ²F. M. McMurry: Elementary School Standards. World Book Co. 1913. Pp. 1-23.
- ³E. L. Thorndike: Handwriting. Teachers College Record. March, 1910. Vol. II.
L. P. Ayres: A Scale for the Quality of Handwriting of School Children. Bulletin of the Russell Sage Foundation, 1912, No. 113.
S. A. Courtis: Elementary School Journal. Vol. 12, Nov., 1911, Pp. 127-138

problem. It is an attempt to determine with some definiteness the factors which constitute good teaching in the elementary school, and to ascertain, as far as possible, the relative importance of each of these factors. The writer has not attempted to make a complete analysis of the teacher and an evaluation of him in each of his activities and relations. The investigation is limited to a consideration of actual classroom work, the teaching process.

Four principal aims have been kept in mind thruout the investigation: First, to limit the number of items to be considered, in order not to make the list cumbersome and discouraging to persons using it, and at the same time to make each of these items so clear that it will have, as nearly as possible the same meaning for all persons using the list; Second, to avoid a purely arbitrary selection and evaluation of items; Third, to get as fair an estimate as possible of the teaching in each room by securing a number of ratings; and Fourth, to secure an objective check upon the ratings by ascertaining the progress made by pupils in some of the elementary-school subjects.

CHAPTER I

TEACHER-RATING FORMS

A. Importance of a Teacher-Rating Scale from the Superintendent's Point of View.-- One conception of a teacher-rating scale is that of a measuring device which a superintendent can apply to his teachers and thereby determine in any particular case whether a teacher should be promoted or reduced in rank, retained or dismissed. This view of the proper use of a scale, exclusively by the superintendent, accorded well with earlier conceptions of the function of a superintendent. The superintendent was, in the larger school systems, sometimes an organizer, sometimes an administrator, sometimes, and still too often, merely a clerk to the board. In the smaller school systems he was little more than one of the teachers. He was seldom a supervisor of teaching in any real sense. In recent years the duties of a superintendent as a supervisor of teaching have come to be recognized as among his most important duties. Whereas the duties of a superintendent in connection with his teachers were formerly concerned largely with recommendations for appointment and dismissal, promotion and reduction in rank, they are today largely concerned with the improvement of teachers in service.

Corresponding to, tho not coincident with, this new and growing opinion of the importance of the supervisory duties of the superintendent has come the realization of an added purpose in schemes for rating teachers. The superintendent must have a basis for making recommendations for promotion and dismissal of his teachers, and to provide an adequate and largely objective

basis is at least one of the principal functions of one type of scale. There should be a scale, however, the aim of which is to make possible more thorough-going coöperation between the superintendent and his teachers in the improvement of the latter. A scale for rating teaching efficiency should prevent the superintendent from basing his judgment of a teacher's work on trivial matters, on non-essentials. Without some clearly formulated list of items, such as a scale should contain, there is danger that a superintendent, principal, or supervisor will be too largely influenced by trivial personal, unimportant, or irrelevant considerations.

Again, the superintendent's unanalyzed judgment may be approximately correct and yet the impression of the superiority or inferiority of the teaching may be so hazy and indefinite in the superintendent's mind that he will be unable to make any suggestions of value. Any one may casually visit a recitation and be impressed at the close with the feeling that it was satisfactory or unsatisfactory, without being able to point out definite and specific virtues or defects. Upon referring his observations to standards which he has set up for a recitation he may find that the organization of the material of the recitation was bad, the proper stress on relative values was lacking, the teacher's voice was high and rasping, or the habits of the pupils were slovenly. When any such defect stands out prominently in a recitation the observer is in a position to make definite suggestions. From the point of view of the superintendent, then, two types of scales are valuable. The scale which measures the total efficiency of the teacher,

while it should be freely accessible to the teacher, in order that he may know on what points he is judged, has as its principal aim the provision of a fair and adequate basis for determining the teacher's right to promotion or salary increase. On the other hand, the scale which provides an analysis of the teaching alone and a comparative evaluation of the elements composing it, aims to provide the superintendent with a basis for helpful suggestions to his teachers and for making provision for their improvement in other ways.

B. The Importance of a Teacher-Rating Scale from the Teacher's Point of View.-- By means of a scale for rating teaching efficiency then a superintendent should be able to help his teachers, but even to a greater extent, perhaps, the teachers should be able to help themselves. If a superintendent should have a definite and clearly formulated list of items upon which to judge the worth of the teaching in his schools, it is equally important, if not very much more important, that the teacher should have an aid for the analysis of his teaching. If the superintendent needs such an aid in framing helpful suggestions for his teachers, even more does the teacher need such an aid to help him toward well directed self-improvement. The teacher may be complacent with regard to his accomplishment in his teaching or he may be dissatisfied without knowing just what particular phase of his work is at fault. For such teachers a scale for teaching efficiency should reveal their points of strength as well as their points of weakness.

A scale for rating teaching, then, can be of the highest service only when it is used cooperatively by teachers and superintendents. The superintendents or supervisors can make their visits only at comparatively long intervals. The teacher can, and should, keep a record of his work from day to day. Where the teacher is not consulted or advised in regard to his work, he is likely to be all too ready to attribute the low estimate of a superintendent to some personal bias. The more teachers are helped to appreciate the basis on which the weakness or strength of their work is estimated, the more ready will they be to acknowledge their weaknesses and endeavor to correct them. The more they are able to see the justice of a superintendent's comments and criticisms, the better will they be able to appreciate and to follow any intelligent suggestions made by him.

CHAPTER II.

METHODS IN USE AND METHODS RECOMMENDED FOR TESTING

THE ABILITY OF TEACHERS

A. Examinations as a Method of Testing the Ability of Teachers.-- As stated earlier, it is absolutely necessary, for efficient school administration and supervision, that there should be in use some scheme of rating teachers and teaching, based on some kind of objective determination and evaluation of the elements which constitute the efficiency of the teacher and the teaching process, respectively. Teacher-rating in some form is found in every school system, whether the rating is based on any definitely formulated list of items or not. Some of the schemes in use will be reviewed, for the purpose of finding if possible what, in the opinion of school men, are the important elements in the efficiency of elementary-school teachers, what are the just bases for appointment and promotion.

Of the common methods which are supposed to test to some extent the efficiency of the teacher ~~one~~ is an examination given to prospective teachers. The certificating examinations are usually uniform in the smaller school systems and country districts of a state, while in the larger city systems there is much more independence and variety. These examinations test the knowledge of the candidate in certain narrow fields but give no reliable evidence of teaching ability. They serve to eliminate some, who, on the basis of scholarship, are unprepared for teaching.

Another test of the teacher is the so-called promotional examination. This method is worth something as a means of stimulating the teacher to continued study. It acts as a spur to some teachers who are inclined to feel that when they have once been appointed to a teaching position they are entitled to life tenure with no responsibility for further professional growth. The preponderance of opinion of superintendents who have tried promotional examinations seems to be in favor of such examinations as a means of keeping their teachers professionally interested, where the work for which credit for promotion is given can be carried on simultaneously with the every-day work of the teacher. Where study at some distant university or normal school is involved, however, the direct financial gain is not for a long time sufficient to reimburse the teacher for the necessary investment of time and money. Hence, many teachers do not consider the advantages derived from such work commensurate with the cost involved.

B. Teacher-Rating in the Small Cities.--- While the certificating examination is the common basis for admitting candidates into the teaching profession, and while the promotional examination is more or less common as a basis for advance in rank and increase in salary, the principal basis for rating the efficiency of a teacher, once he has begun to teach, is the judgment of the superintendent or of some other supervisory officer. The following reports from superintendents of small cities are thought to be fairly representative of practice in cities of

this size thruout the country¹.

Aberdeen, South Dakota.- "We have 70 teachers, and our means of judging them is by visiting their classes and by the results they obtain in advancing the pupils under them."

Champaign, Illinois.- "Nothing but general observation. Until we can know the effect on the lives of pupils, we can not rate the efficiency of teachers justly. I trust personal judgment."

Charlotte, North Carolina.- "Teachers are promoted according to their qualifications and fitness for the better position. This is left to the judgment of the superintendent and board."

Easton, Pennsylvania.- "We have no definite plan when rating and promoting teachers except a general committee discussion at the end of the year."

Enid, Oklahoma.- "There are so many, many qualities which enter (into teaching efficiency) that our system has never undertaken to classify them. We take each teacher and get the product of all factors in her, without reducing her to a mathematical formula."

Hamilton, Ohio.- "We have no fixed rule or schedule for rating teachers. The only question which we consider is the efficiency of her work, and this is gauged by the superintendent and principals."

Nashua, New Hampshire.- "It is merely a question of judgment on the part of the superintendent."

In these reports from superintendents there appears to be practically no agreement as to the basis for judgment of the teacher's efficiency. In one thing only do they apparently agree, and that is in the absence of any analysis of that on which judgment is based. There are many minor differences.

¹A. C. Boyce: Methods for Measuring Teachers' Efficiency. The Fourteenth Yearbook of the National Society for the Study of Education. pp. 14 and 15. (The few reports quoted are selected from a much longer list contained in this work of Boyce.)

In some cases the experience or length of service in the system automatically governs the salary of the teacher. All teachers who are allowed to retain their positions are allowed each year an increase of salary. The most definite statement in regard to the basis on which teachers are retained is "If good enough". A slightly different method is represented where "a general committee discussion at the end of the year" is the only attempt made at rating teachers. Some superintendents are not in sympathy with any attempt at analysis of the teacher's ability. One report especially shows such an attitude. "There are so many, many qualities which enter into teaching efficiency that our system has never attempted to classify them. We take each teacher and get the product of all factors in her, without reducing her to a mathematical formula." This is the kind of attitude on the part of the superintendents which makes it difficult to put into practice any scheme of teacher-rating based on scientific analysis. From this point of view, any attempt to define so personal a thing as teaching efficiency seems almost sacrilegious.

A similar attitude is shown by a report from one of the large cities, which appears later in this chapter. In this case the superintendent states that he has no rating form and wishes nothing so mechanical.

That a certain amount of caution should be exercised in the use of rating-forms no one will deny. No rating form, probably, will ever include all qualities that are desirable in a teacher in just the right combination. There is a certain

danger that we shall come to depend too much upon such aids to judgment. The same objection may be applied to the use of all objective tests in the school subjects. No one should contend that these scales and tests, in their present stage of development at least, measure all of the good results that may be gained from the subject measured. But we may use them profitably if we use them discriminately and do not claim too much for them in our interpretation of the results. To condemn the use of such instruments as we have because they are not perfect or complete is surely unwarrantable.

We may reasonably hope to determine by observation certain factors which are found in good recitations and to use our knowledge of these factors, so determined, in estimating the worth of later recitations and in discovering just where particular emphasis is needed. One who always objects to an investigation of his methods, whether he be engaged in school work or in some other occupation, is open to some suspicion. "Some of us have glorified in the fact that we were dealing with forces which we did not understand, and have found a peculiar consolation in the belief that they never could be understood"¹. There

¹W. C. Bagley: The Need of Standards for Measuring Progress and Results. Report of the Proceedings of the N. E. A. 1912.

is a certain sense of security which accompanies such a feeling of communion with the inscrutable and the immeasurable, but there is not a confident assurance of accomplishment.

Most of the replies state that the judgment of the superintendent is accepted as the basis of promotion or retention in the system, and it is probable that this judgment is the basis of the other schemes reported above which do not expressly state it to be so. There is a real difference, however, in the case of those cities where a teacher is estimated on the basis of his "promotion-record". Such a system has the apparent advantage of objectivity, if only the tests of the progress of the pupils could be complete. Obviously, however, when teaching efficiency is measured in this way, and "progress of the pupils" is made synonymous with "promotion", the resulting effect upon the teaching may be decidedly narrowing and undesirable and the effect on standards of promotion might conceivably be vicious.

The danger in making the promotion of pupils the sole, or the most important, basis on which to judge teachers is a very

real one, whether examinations are required of all or not; but it is particularly threatening where examinations are omitted in the case of those pupils who attain a sufficiently high grade on the term work¹. When the advancement of a teacher depends upon his promotion of pupils, he is very strongly tempted to lower his standard of work and thereby raise his promotion record.

Of course, only the minimum of desirable results from any study can be fixed or set up as standards. When examinations and tests play a prominent part in the school work, the estimating of teaching efficiency on the basis of promotion of pupils tends to narrow the aims of the teacher to those requirements. On the other hand, when examinations and tests play an insignificant part, the more purely subjective standards of the teacher, under the influence of considerations of self-advancement, will tend to be still less stable.

¹An interesting investigation of the effect of the exemption system upon high school grades has recently been reported. (C.J. Anderson: Is the Exemption System Worth While. School and Society, March 4, 1916. Vol.III. pp 357-360)
A study was made of the grades in a high school, covering a period of 6 years; the two years before the introduction of the exemption system, the two years during which it was in operation, and the two years just after it was discarded. Coincident with the introduction of the exemption system there appeared a decided increase in the number of high grades. In English the number of pupils graded in the first division (grades of 93-100) reached 57% of the total, while in nearly every subject the curve representing the distribution of grades was sharply skewed to the left (toward the high grades). In the two years preceding the introduction of the exemption system and the two years following its abolition, the distribution of grades followed much more closely the normal curve of probability. While the fact that there were relatively few grades in the group ranking second from the top, may be attributed in part to the especial incentive which the exemption system offers to those who are near the exemption grade, to increase their efforts, it probably means in many cases that the teacher is inclined to favor all whose work approaches the minimum required for exemption.

One superintendent suggests, as others have done, that "until we know the effect on the lives of the pupils, we can not rate the efficiency of teachers justly". Whether an investigation of the effect on the lives of the pupils is here meant to be seriously recommended or whether this statement is simply an expression of this superintendent's opinion of the hopelessness of the task of determining teaching ability, can not be definitely stated. The aim of such an investigation is worthy, but the possibility of carrying it thru seems rather remote.

C. Teacher Rating in the Large Cities.-- In most of the larger cities a more or less detailed analysis of the ability of the teacher is attempted and a rating in a list of items is made by one or more supervisory officers.

In order to ascertain exactly the method of rating teachers in the large cities the writer directed the following letter to the superintendents in all of the thirty-two cities in this country with a population of more than one hundred fifty thousand¹.

"Will you please send me the forms that you use in rating elementary school teachers? If you use no printed forms, will you please indicate the general plan you use in estimating their efficiency?

"If you can give me any information as to when and where definite forms for rating teachers were first used, I shall be very grateful. I am enclosing postage and shall very much appreciate an early reply."

Twenty-six superintendents responded to this request. The facts for two of the remaining six cities have been gathered

¹On basis of 1910 census.

from other sources¹.

Eleven of these cities use no rating form. These cities still depend upon the general estimate of the superintendent, the principal, the special supervisor, or all combined; supplemented by the teacher's record with regard to experience and professional preparation. In Chicago much stress is laid upon the teacher's successful experience, while in Cincinnati a great deal of stress is laid upon his preparation and continued professional interest and growth.

The rating-forms used in the seventeen remaining cities defy accurate classification. Among some of these there is a wide variation in the emphasis put upon the various phases of teaching ability, and consequently in the items included in the rating form. Even between these cities which agree as to the importance of the large bases of teaching ability, there is little agreement in regard to the extent to which these larger factors shall be further analyzed. The four groups below represent the classification which the writer has made in order to facilitate a further discussion of these forms:

¹See Elliott: City School Supervision. pp 154-160 for forms used in New Orleans and Philadelphia.

Group I	Group II	Group III	Group IV
Cities using no Rating Form	Cities using Form Made Up of a Few Comprehen- sive Terms	Cities using Form Composed of a long list of Unclassi- fied Items	Cities using Forms consist- ing of long Lists of classi- fied Items
Baltimore	Jersey City		Boston
Chicago	Kansas City	Atlanta ¹	Cleveland
Columbus	New York	Milwaukee	Detroit ³
Buffalo ²	Oakland	Toledo	Newark
Cincinnati	Philadelphia	(Minneapolis) ⁴	New Orleans
Indianapolis	St. Louis		Providence
Los Angeles			Rochester
Portland			Washington
San Francisco			
Seattle			
St. Paul			

Superintendents in some of the cities in Group I report certain inclusive qualities which they try to keep consistently in mind in forming judgments of teachers, but they do not attempt to formulate these in writing. One of these eleven superintendents expresses his regret that he has no rating form.

¹Atlanta uses a form containing ten rather inclusive terms. She can be more justly classed with group III, however, than with any other group.

²No form for regular teachers. Form of sixteen items for substitute teachers.

³Elliott scale, slightly modified.

⁴Form received late, not included in the above discussion.

Another writes very emphatically that he wishes nothing so mechanical. The other nine are silent on this point.

The following form, used in St. Louis, is typical of the forms sent in from cities of Group II:

Practical Efficiency			Professional Qualities		
Management of children :	Instruction :	Attention to :	Scholarship :	Professional :	Personal Qualifications :
:	:	Details of :	:	:	:
:	:	School Business :	:	Interests and :	Growth :
:	:	:	:	:	:

Such a form suggests the large divisions of teaching ability. It leaves to the person rating the task of analyzing these comprehensive terms; estimating in terms of the itemized elements of each; and summing up the results in the form of ratings in the few inclusive terms. The alternative to this method, for the person using a form of this sort, is to depend upon a general impression; based on a few conditions which, experience has taught him, stand out in recitations of a given grade, good or bad. In exceptional cases this may be a trustworthy method, but the writer believes that such a scheme in general use is far less reliable than a more detailed form.

The form used in Toledo is shown below, as an example of the forms used in the cities of Group III:

1. Name of Teacher
2. Scholarship
3. Success in Teaching
4. Preparation of Lessons
5. Ability to hold Attention of Class
6. Success in Discipline
7. Spirit of School
8. Care of Room
9. Health
10. Personal Appearance
11. Professional Industry and Spirit
12. Self-Control
13. Attitude toward Children
14. Attitude toward Parents
15. Attitude toward other Teachers
16. Does the Teacher Coöperate heartily with the Principal?
17. Is she faithful? -- Reliable?-- Progressive?-- Punctual?
18. Do outside duties or pleasures render this Teacher relatively less efficient in her school work?
19. What is the most successful feature of this Teacher's Work?
20. The weakest feature?
21. How many times has this Teacher been tardy this year? How many days absent?
22. Approximately how many times have you visited this Teacher's room during the present year?
23. Do you recommend that this Teacher be retained, basing your answer solely upon the question of efficiency?
24. Remarks -----

It is unwise to criticise a rating form too harshly when the results attained by its use are not known. However, the Toledo form, representing the type of form used in the cities of Group IIJ, invites adverse criticism from several points of view.

This form shows no evidence of an attempt at a thoroughgoing analysis of teaching ability or any consistency in the arrangement of the items. It appears to be little more than an attempt to enumerate as many as possible of the items which are connected with the teacher's efficiency, with no indication of their relative importance or of their inter-relationships. All of the items are apparently considered coördinate. There is also much duplication among the items. "Ability to hold Attention of Class" can not be judged, as distinct from "Success in Discipline" and "Control of Pupils"; neither can "Preparation of Lessons" be separated from "Professional Industry and Spirit"; while "Success in Teaching" must, at least partially, include many of the other items.

This form is fairly representative of early attempts at form-making. It represents a necessary stage in the development of rating forms, but this stage is happily passing if we may judge by the fact that very few of the important cities now use forms of this type.

The following form, used in Cleveland, represents well the forms used in the cities of Group IV:

1. Teaching Power

- a. Does she apply thought and method to the preparation of her daily work?
- b. Is she definite in her instruction? Thoughtful ?
- c. Does she develop power in her pupils?
- d. What kind of results does she obtain?

2. Executive Power

- a. Is she successful in discipline?
- b. Does she secure a responsive working spirit in the school?
- c. Are her relations with the principal's office satisfactory in matters of reports, care of property, discipline of pupils, etc.?
- d. What are her relations with the patrons of the school?
- e. What are her strong points?
- f. What are her weak points?

3. Personal Influence

- a. Does she inspire her pupils and develop in them enthusiasm for work?
- b. Does she inspire her pupils to independence in work?
- c. Does she influence her pupils for good beyond the time they are in her presence?
- d. Are her relations with other teachers in the building wholesome?
- e. Is her work interfered with by outside pleasures or duties or the state of her health?

4. Professional Sincerity

- a. Is she sincere and earnest in her work?
- b. Does she measure thoughtfully the outcome of her practice?
- c. What is her attitude toward the large interests of her profession?
- d. Is she frank and candid in her dealings with pupils?
- e. In what spirit does she receive the suggestions of the principal and supervisors?
Does she regard them as personal or professional?

5. General Culture

- a. Are her scholarship and general information accurate and adequate?
- b. Are her manner, control of voice, and use of English satisfactory?
- c. Is she alert, progressive, and open-minded to new ideas?
- d. What are her special interests?
- e. Has the teacher's personality been sufficiently faulty to require serious criticism?
Have you made such criticism?
How often?
With what effect?

While the position of a number of the items might be seriously questioned, this form shows clearly an attempt to make a real analysis of the ability of the teacher. Some such detailed itemized form for rating is necessary for most principals and supervising officers, if not for all. The superintendent who has analyzed teaching ability and satisfied himself as to the elements constituting it, may think it unnecessary to formulate his scheme in writing. This is probably the position which the advocates of the St. Louis type of form would take. Where the actual rating and supervision must be left to other persons, however, as it must be in the larger cities, a form containing a rather definite and detailed list of items is very necessary.

The new rating forms just prepared for use in Boston almost deserve a separate classification. The Department of Educational Investigation and Measurement, under the direction of Frank W. Ballou, has worked out the most elaborate scheme of teacher rating yet devised in any school system. Three long forms of four pages each are used, and in these a complete analysis of the teacher's total efficiency is attempted. One form deals at length with the teacher's professional preparation; another with his continued professional growth, as evidenced by educational articles or books written, educational literature read, summer schools attended, etc. The third form is made up of two general topics: Personal Equipment, and Ability as a Teacher. Personal Equipment includes personal characteristics under nine sub-topics. Teaching Ability includes Management of the Room, Management of the Class, and Teaching the Lesson. Eighteen items are subsumed under these last three sub-topics.

These forms are too bulky to be included in this study, but the foregoing description will give some idea of the elaborate forms which are being devised in the more progressive cities.

The earliest use of a printed form for rating teachers, which could be traced, was in Milwaukee in 1896. Other cities began the use of such forms as early as 1900.

The situation in regard to teacher-rating in the larger cities is encouraging, at least in so far as the scale for the total efficiency of the teacher is concerned. While nothing approaching a common agreement as to the elements which constitute efficiency in the teacher, and far less agreement as to the comparative value of each, has been reached; there is a great deal of experimentation in progress, which should lead in time to a solution of the problem. In the smaller cities the situation is not nearly so encouraging. In so far as the available facts concerning these cities are representative of conditions generally in this type of city (and there seems to be little reason to doubt that they are fairly typical) the use of any kind of itemized list of qualities as an aid to an analyzed estimate of the teacher or of teaching efficiency is exceedingly rare.

D. Teacher Rating Scales Proposed for General Use.- -

Besides the numerous teacher rating scales constructed for use in particular cities, two scales have been published which have been intended for general use. The work of A. C. Boyce, to be described later under the head of Investigations of Qualities of Merit and the Causes of Failure Among Teachers, finally resulted

in a scale; but that study can be more appropriately included under the latter heading, inasmuch as it involved an experimental investigation of Qualities of Merit, and its primary object was not the construction of a scale. The two scales considered here, then, are those of Elliott and Witham.

The earlier of these scales was prepared by Professor E. C. Elliott in 1910¹. This scale comprises eight large topics, and under these are included forty-two subtopics. Each one of the qualities is given an arbitrary value on the scale, and the grade of a teacher can be read off on the basis of a perfect score of 1000. Suggestions are made as to how and on what basis deductions from the perfect score are to be made.

A very recent teacher rating-scale is that devised by Superintendent E. C. Witham². This "Measuring Scale for Teacher Measurement" embraces forty-six items. It is comprehensive, but also somewhat cumbersome. The method of scoring is unique. Witham provides three grades (+, a, and -) for each of the items, and attempts an exact definition of what is deserving of each score. In endeavoring to fix these points so clearly as to avoid any misunderstanding of them by any one using the scale, he often makes definitions for degrees of merit which are hopelessly artificial. For instance, under the item, Travel, he prescribes

¹E. C. Elliott: A Tentative Scale for the Measurement of Teaching Efficiency. University of Wisconsin, 1910. Slightly modified 1914. See Appendix for scale.

²Teachers' Yearbook of Educational Publication. 1915. Pub. No. 6. pp. 54-58. See Appendix for scale.

the following definitions of the scores;

Over 1000	miles	from	place	of	birth	+
500 to	"	"	"	"	"	a
Less than 500	"	"	"	"	"	-

E. Investigations of the Qualities of Merit and the Causes of Failure Among Teachers.-- In 1910 Ruediger and Strayer¹ published an account of an investigation into the qualities of merit in elementary teachers.

They chose ten items or qualities which they judged to be important factors in the efficiency of a teacher. They had superintendents and principals rank their teachers (204 teachers) in each of these ten items and in General Merit. From these rankings, correlations between General Merit and each of the ten qualities were determined, and conclusions were drawn as to the relative importance of each of the qualities in the total efficiency of the teacher.

The authors stated that their scheme was merely tentative, and did not maintain that it was by any means complete.

In a study similar to the one outlined above, A. C. Boyce² in 1912 endeavored to determine the inter-relationships of qualities of merit in high school teachers and the correlations of each with general merit. He borrowed from Elliott's scale the general headings: Administrative, Dynamic, Achievement, Social Spirit, Physical, and Moral. Boyce's list of qualities is

¹Journal of Educational Psychology, May, 1910. Vol. I, pp.272-278.
²Journal of Educational Psychology, May, 1912. Vol.3. pp. 144-158

longer than that of Ruediger and Strayer, but the type of qualities included is not markedly different. In general aim, too, the scale agrees with the earlier one. It represents an attempt to determine the relative importance of each of the qualities entering into the total efficiency of the teacher.

Boyce's method in his investigation was similar to that of Ruediger and Strayer. He had superintendents simply rank their teachers in each of the qualities of his list. The superintendents then ranked the same teachers in "general merit." Correlations between each of the qualities and "general merit" were then worked out, as in the study of Ruediger and Strayer, these correlations being used in this study, as in theirs, as a basis for certain conclusions as to the relative importance of the qualities as factors in determining the efficiency of teachers.

In a later and much more detailed study in the same field, Boyce has had his scale, now analyzed and amplified to include 45 items, applied to 424 teachers in 39 cities¹. These teachers were rated in twenty school systems by the superintendents and in the remaining nineteen by the high school principals. In this later study Boyce has provided for the distribution of teachers by rank in accordance with the theory of the curve of probability. He has chosen for convenience the distribution recommended by Cattell²:

Very Poor	Poor	Medium	Good	Excellent
10	20	40	20	10

Thus, there are ten vertical columns opposite the list of qual-

¹A. C. Boyce: Methods Measuring Teacher's Efficiency. The Fourteenth Yearbook of the National Society for the Study of Education. Part II. The University of Chicago Press, Chicago, Illinois.

²J. McKen Cattell: Examinations, Grades, and Credits. Popular Science Monthly. Vol. LXVI, p. 367.

ities; one column being allowed for the very poor teachers, two for the poor, four for the medium, two for the good, and one for the excellent. Some such required distribution is more or less necessary, as many superintendents, when asked to distribute their teachers under the five such headings as those used in the above distribution, tend to rank all of them high. In other words, superintendents do not, as a rule, recognize the fact that the typical teacher is the mediocre teacher. This is, of course, the teacher for whom rating schemes and scales are primarily devised. If teachers in general really possessed such teaching ability as the average superintendent, in his independent judgment is inclined to attribute to his teachers, there would be much less need for a rating scale of any sort than there is at present.

The results of the studies of Ruediger and Strayer, and Boyce may be profitably compared with the results of three other studies which were directed toward a determination of those qualities, the absence of which in teachers is most often responsible for failure.

The study of Miss Moses is based on the reports of failures of high school teachers and the causes of such failures, from the superintendents in seventy-six school systems¹. The other study, by Sherman Littler, is a study of the causes of failure among elementary teachers². Except in the grade of teachers investigated, it is similar to the study of Miss Moses.

¹School and Home Education, March, 1914.

²School and Home Education, January, 1914.

In the two lists below, the left-hand column contains the qualities which Ruediger and Strayer concluded to be the most important factors in teacher-efficiency, in the order of their importance. The right-hand column contains the qualities which Littler's reports indicated were responsible for failures of elementary school teachers, in the order of their frequency of occurrence.

Ruediger and Strayer

1. Discipline
2. Teaching Skill
3. Initiative
4. Personality
5. Studiousness
6. Following Suggestions

Sherman ~~and~~ Littler

1. Poor Discipline
2. Weak Personality
3. Lack of Teaching Skill
4. Lack of Interest
5. Lazy-No Daily Preparation
6. Failure to Coöperate

A similar comparison of the two studies applied to high-school teachers shows there too a remarkable agreement as to the importance of a number of items which appear in both lists of qualities, tho the similarity of results is not so striking as in the case of the elementary school studies.

Boyce

1. Instructional Skill
2. Success of Pupils
3. Stimulation of Individuals
4. Intellectual Capacity
5. Governmental skill
6. Cooperation
7. Studiousness
8. Interest in the Life of the School
9. Initiative
10. Executive Capacity
11. Health

Miss Moses

1. Poor Instruction
2. Weak Personality
3. Lack of Interest in the Work
4. Weakness in Discipline
5. Lack of Sympathy
6. Inability to cooperate
7. Unprofessional attitude
8. Weakness in knowledge of Subject-matter
9. Disloyalty
10. Immorality
11. Health

The following summarizes the results of a more recent study¹ of the causes of failure among elementary and high school teachers combined, the items being ranked here, as before, in the order of frequency in which they are reported to appear as causes of failure. The study is based on the replies from 116 superintendents, these replies dealing with the causes of 270 failures of teachers in one year out of a total of 4848 teachers considered.

- | | |
|-----------------------------------|--------------------------------------|
| 1. Weakness in Discipline | 8. Too Nervous |
| 2. Lacked Judgment | 9. Deficient in Social Qualities |
| 3. Poor Methods | 10. Unprofessional Attitudes |
| 4. Deficient in Scholarship | 11. Unattractive Appearance |
| 5. Daily Preparation Insufficient | 12. Lacked Culture and Refinement |
| 6. Lacked Sympathy | 13. Uninterested in Work of Teaching |
| 7. Lacked Industry | 14. Poor Health ² |

The agreement here with the results of former studies is not so close as between the earlier ones just compared, unless we put an extremely liberal interpretation upon some of the items, as the author suggests. He says that personality can not be divorced from Disciplinary Power, hence, include it under the head of Discipline. He suggests that Sympathy, Social Qualities, and several others might come under the same head. Under Judgment he would consider no fewer than thirteen of the other items that appear in his list. Many of the items are not directly comparable with those of the other lists. It is applied to high school and elementary pupils alike. It agrees very decidedly with the other studies in indicating the importance of discipline. Whereas

¹Henry Buellesfield: Causes of Failure Among Teachers. Educational Administration and Supervision, September, 1915.

²Altogether, 27 causes of failure were reported in this study.

former studies have agreed as to the comparative insignificance of health to the efficiency of the teacher, the ranking here places it near the middle of the list. This fact does not necessarily mean that the results of this study are opposed to the results of the earlier studies, however, as many more qualities are included here.

The five studies compared represent what might be called positive and negative methods of working toward the solution of the same problem. They seem to show that superintendents have unconsciously reached some measure of agreement as to a few of the important general qualities (however ill-defined) which enter into the efficiency of teachers.

CHAPTER III.

A. A Survey of the Field of Scales and Tests in Elementary School Subjects.-- Inasmuch as the writer was forced to limit his testing to two elementary school subjects, he wished to select two which had been well recognized and standardized and extensively used. In order to make an intelligent choice it was necessary to make a careful study of the scales and tests which have been devised and a survey of the critical literature. The results of this study in the field of tests and scales is presented in this chapter in brief tabular form.

The tables are self-explanatory. They present simply those facts which are essential to an understanding of the nature of the tests which have been devised, of the extent of the movement toward objective measurement in school work, and to a comprehension of present tendencies in the formulation of such tests. Much time and space could be profitably devoted to a thoroughgoing analysis, comparison, and evaluation of the methods employed. Only a summary treatment of this sort can be included here.

The earliest recorded attempts at anything approaching systematic testing on a comprehensive scale in the elementary school subjects were begun by J. M. Rice¹ in 1895. He did not do preliminary testing as a basis for a scientific investigation, and his conditions were by no means uniform. Some years later O. P. Cornman², and still later C. W. Stone³, improved very much the methods of this earlier investigation in arithmetic. It

¹Educational Research. A Test in Arithmetic. The Forum, Vol. XXXIV, pp. 231-297.
²Spelling in the Elementary School. Boston, 1902, Ginn and Co.
³Columbia Contributions to Education, No. 19, 1908.

remained for S. A. Courtis⁴ to extend the work of Stone, apply tests on an extensive scale, and set up standards of achievements for each grade. Rice's name deserves a prominent place in the list of investigators in this field, not for the practical value of his immediate results, but for his success in stimulating further investigations.

The investigations in this field of objective measurement in the elementary-school subjects can be roughly classified into non-analytic and analytic. In the first type of study, and this is the general type of most of the earlier studies, the educational product has been taken in the rough, and little attempt has been made to discover the particular points of strength or weakness. The handwriting scale of Thorndike and the composition scale of Hillegas represent well this type. As contrasted with these in the same subjects, the handwriting scales of Houston, Freeman, and Gray and the Harvard-Newton composition scale represent very clearly the analytic type of scale.

In the construction of scales of the first type the authors used the judgments of a large number of people, as to the general merit of the specimens. No attempt was made to determine the particular merits or defects of any sample of handwriting or composition. Many of the judges were selected because of their special qualifications for judging in these fields, but their judgment represented only their general impressions. Thorndike did not contend at the time of his investigation that this method

¹Elementary School Teacher. Vol. 10, Pp. 59-74 and 179-199.

should be finally accepted. He simply maintained that it was the best method known at that time, considering the uncertainty as to what were the elements of importance in handwriting. He predicted that an analytic scale of some sort would come into use when the elements constituting what is called "general merit" should have been determined. The Hillegas composition scale was constructed by a method similar to that used by Thorndike, i.e., on the basis of a number of judgments as to the general merit of samples. No distinctions were made among the various forms of composition.

The Harvard-Newton composition scale was derived after a critical study of a comparatively small number of compositions of each of the four prose forms: exposition, description, narration and argumentation. The specimens were taken from the seventh and eighth grades of the Newton schools and were carefully criticised and analyzed by the principals and the seventh and eighth grade teachers of English. Each sample which appears on the scale is accompanied by a critical evaluation and justification of its position in relation to the sample just preceding and just following. Here the plan was to have from a few judges a very exhaustive study of a limited number of specimens, rather than the general estimate of a large number of judges on a great many samples. The method is intensive rather than extensive.

The handwriting scales of Freeman and Gray were derived by methods similar in general to those used in the composition scale just described. Both of these authors analyzed specimens of handwriting, with the help of other persons; and chose certain qualities, such as alignment, spacing of words and letters, slant,

etc., which were found to determine the excellence of handwriting. Freeman includes five such elements and Gray includes nine.

The Courtis tests in arithmetic in their evolution, from the unanalytic to the analytic type, might be cited as further evidence of the development of tests and scales; in that they have come to recognize particular, rather than general, arithmetical abilities. The two types, however, can be distinguished in the following tables.

The recent developments promise to transform scales and tests from mere measuring devices into supervisory aids. It is worth something to be able to say with approximate accuracy what the accomplishment of a given grade in handwriting is, as compared with a large number of similar grades, or how the handwriting of an individual compares with the average of a large number of individuals of his grade. This is the most that the advocates of the nonanalytic type of scale can expect to accomplish with it. A scale or test would be worth incalculably more if by means of it one could tell just wherein a sample of handwriting or other material is strong and wherein it is weak, and on the basis of this analysis point out just where the emphasis toward correction or improvement in any particular case should be put. Such is the goal, the reasonably attainable goal, toward which investigators in this field are striving.

Survey of Objective Tests and Scales in Elementary School Subjects.

Name of Investigator	Subject Investigated	Date of Study	General Method Employed	Results
Rice ¹	Arithmetic	1895	Eight examples given to each grade (LV-VIII) inc. including 6000 pupils. Measurement of general arithmetical ability.	No standard of achievement established and no tests recommended as standards.
Stone ²	Arithmetic	1908	Measurement of specific arithmetical abilities. Tests in addition, subtraction, multiplication and division. Correlation between different abilities determined. Conditions much better controlled than in Rice's tests in the same subject. 6000 papers scored. Sample individual scores and median scores of 26 school systems given.	Tests in the four fundamental arithmetical operations and in simple reasoning.
Courtis ³	Arithmetic	1909 1912 1914	Tests in copying figures, in the four fundamental operations of arithmetic, and in arithmetical reasoning given to large numbers of pupils in early tests. Later, results modified or verified by submitting the tests to 33000 pupils in the New York City schools. Some tests first used (1909). Tentative tests and standards (1912). Latest standards (1914).	Tests and standard scores worked out for each grade on the basis of scores made by pupils in this investigation. Score which 30% equal or exceed taken as the standard.

¹Educational Research. A Test in Arithmetic. The Forum, Vol. XXXIV. Pp. 231-297.

²Arithmetical Abilities and Some Factors Determining Them. Columbia Contributions to Education, Teachers College Series. No. 19, 1908.

³Measurement of Growth and Efficiency in Arithmetic. El. School

Thorndike ¹	Drawing	1913	268 ratings of fifteen samples of drawing made on a scale of 0-17. Samples then arranged on the scale in accordance with the theory that equally often noticed differences are equal.	Scale of fractional values of 14 steps, ranging from 0 to 17, with a sample accompanying each step.
Hillegas ²	English Composition	1912	Seven thousand compositions by "young people" divided roughly into ten classes, representing as many grades of merit. 83 samples, covering the whole range, with some artificial samples to fill the gaps, rated by a number of judges in degree of merit, represented numerically and in simple relative rank. Combined judgments used in construction of scale. All forms of composition used indiscriminately in the scale.	A scale containing samples ranging in merit from 0 to 937.
Ballou ³	English Composition	1913	Eighth grade compositions from the Newton schools used; twenty-five samples of each form of composition (narrative, description, exposition and argumentation) rated on per cent basis, with 40 and 90 as limits. All samples then ranked as to relative position. All samples showing extremes in rank and grade eliminated. Samples chosen for the scale which approximated grades 45, 55, 65, 75, 85 and 95 most closely and showed little	Six point scale, ranging from 40 to 90, each step in the scale including a sample of each of the four forms of prose composition.

(Cont) Teacher, Vol. 10, Pp. 59-74 and 179-199.
 Measurement of Growth and Efficiency in Arithmetic. El. School Teacher, Vol. 11, Pp. 171-185, 360-370 and 528-539.
 Standard Scores in Arithmetic. El. School Teacher, Vol. 12, Pp. 127-237.
 (Continued on next page)

variation in rankings.
Each sample of each
form of composition
analyzed separately.

Courtis ¹	English Composition	1915	Large number of pupils' compositions rated on the Hillegas scale.	Standard scores on the Hillegas scale for Grades IV- VIII.
Thorndike ²	Handwriting	1910	One thousand samples of (IV to VIII) grade chil- dren's handwriting rat- ed in general merit on a scale of fourteen equal steps, and this method checked by rat- ing simply according to relative merit.	A scale con- sisting of fourteen equal steps.
Ayres ³	Handwriting	1912	Measurement of a particu- lar quality of handwrit- ing, legibility. Large number of samples rated on the basis of the time required to read them.	Scale of 8 equal steps (20-90). Sam- ple repre- senting each step attached

(Cont.)

¹The Measurement of Achievement in Drawing. Teachers College Record.
Mch. 1913.

²The Measurement of Quality in Eng. Composition. Teachers College
Record. Sept. 1912.

³Scales for the Measurement of Eng. Composition. Harvard-Newton
Bulletin, No. 11. Harvard University Press, Cambridge, Mass.

¹Standards in Rates of Reading. 14th Yearbook of the National
Society for the Study of Education. Pp. 44-59.

²Handwriting. Teachers College Record, Mch. 1910.

³A Scale for the Quality of Handwriting of School Children. Bulletin
of the Division of Education of the Russell Sage Foundation, 1912.
No. 113.

Houston ¹	Handwriting 1912	Specimens of handwriting given definite value and position on a scale, on the basis of size, form, smoothness, slant and spacing of letters, neatness or marking over of letters or words, and spacing of words.	Scale of seven steps; 20-30, 40-50, 60-70, 75, 80, 85, and 90-95. Under each specimen are suggested its particular defects.
Starch ²	Handwriting 1913	Samples of children's handwriting rated for their legibility, taking the time required to read an exposed section of a line, thus avoiding aid from the context.	Reached the conclusion that the so-called exposure method used here is the most reliable method known, of testing legibility.
Freeman ³	Handwriting 1914	Five qualities of handwriting selected; uniformity of alignment, uniformity of slant, form of letters, spacing of words, and spacing of letters. Samples representing three degrees of excellence in each quality chosen. Values given to these samples in each quality 1, 3 and 5 except in the case of form of letters, in which case the values were 2, 4 and 6. The value of any sample by this scale is equal to the sum of its values in all of the five qualities.	A scale consisting of five charts, each chart containing three samples of handwriting and representing three degrees of merit in one of the five qualities.

¹Manual of Penmanship and Guide to Rating. New Haven, 1912.

²The Measurement of Handwriting. Journal of Educational Psychology. Oct., 1913.

³An Analytical Scale for Judging Handwriting. El. School Journal. Vol. 15, 378-386.

Witham ¹	Handwriting 1915	Measurement of speed, legibility, and form or beauty. All these combined by Weiss index method, giving each equal weight, "gives" general merit or rank of any sample.	Combination of former methods; no new scale devised.
C. Truman Gray ²	Handwriting 1915	A list of the qualities which go to make up excellence in handwriting submitted to a number of judges and ranked according to their importance. The upper nine from this list again submitted to a new set of judges and ranked again in the same way. These rankings translated into percentage values on the basis of a total of one hundred.	A scorecard, on which are nine qualities each with a definite value attached.
Freeman ³	Handwriting 1915	Investigation of speed and quality of handwriting in grades II-VIII in cities of more than 30,000 population. Also, a questionnaire investigation of the opinion of business men as to the quality of handwriting necessary in business; quality being measured on the Ayres scale. Smoothing the curve representing the upper quartile of measurement, influenced by business men's opinions, gives standards.	Standard scores for each grade (II-VIII) in speed and quality, quality being measured on the Ayres scale and speed, in letters per minute written.

¹All the Elements of Handwriting Measured. Ed'nal, Admin. and Sup. May, 1915. Method of Measuring Handwriting. School Ed. Journal, May, 1914.

²A Score Card for the Measurement of Handwriting. Bulletin of the University of Texas. 1915. No. 37.

³Handwriting. 14th Yearbook of the National Society for the Study of Education. Pp. 61-73.

Courtis ¹	Handwriting	1915	Investigation of the rate of writing an original story and rate of writing a reproduction of a story read. Standards based on rates of large numbers of pupils.	Standard rates for writing in each of the grades (IV-VIII) inc.
Rice ²	Language	1903	Pupils tested as to structure of sentences and excellence of form in reproduction of a selection read aloud to them. Tests given in person, by Rice, to 8300 pupils.	Great amount of overlap- ping between the succes- sive grades discovered. No scale given.
Thorndike ³	Reading	1914	Eleven hundred pupils tested for comprehension. Twenty-five hundred tested for visual vocabulary. These tests given in grades V-VIII. Nine lists of words prepared. Pupil asked to mark each one in a certain way to show that he recognized it. To test understanding, passages prepared, ranging in length from a short sentence to a paragraph of ordinary length, and covering similar range in difficulty of ideas contained. Ranking of pupil then is on basis of words recognized and ideas correctly reproduced.	Tentative scale pre- sented, sub- ject to fur- ther testing and revision.

¹Standards in Rates of Reading. 14th Yearbook of the National Society for the Study of Education, Pp. 44-59.

²Educational Research. The Results of a Test in Language. Forum, Vol. 35, Pp. 269-

³The Measurement of Ability in Reading. Teachers College Record. May, 1914.

W.S.Gray ¹	Oral Reading	1914	A series of ten paragraphs of increasing difficulty, due to the increasingly long and difficult words. Series tested on three groups of pupils in three schools with rather uniform results.	A provisional scale for measuring ability to pronounce English sentences.
F.J.Kelly ²	Silent Reading	1915	Sixteen short passages framed to test the pupil's ability in silent reading. These given to pupils with directions to make certain marks or underscore particular words if certain things were true, from the passages read. A value, determined by the time required to read, given to each passage. No passage counted unless it was read correctly. Reading ability represented by the scores made in five minutes. Three sets of tests, differing somewhat in difficulty, given to three classes of pupils; grades III-V inc., VI-VIII inc., and high school classes. Fifteen hundred pupils tested in (III-VII); somewhat smaller numbers in the higher classes. Standards for each grade worked out on basis of these scores.	Tests for silent reading and standard scores for each of the grades III-XII.
Courtis ³	Reading	1915	Rate of reading the completion of interesting story measured, and words per minute calculated; pupil being able to reproduce 50% of the ideas in a 400 word passage.	Standard scores in words read per minute for grades IV-VIII.

¹A Provisional Scale for Measuring Ability to Pronounce English Sentences. Teachers College Record, May, 1914.
(Cont. on next page)

Starch ¹	Reading	1915	Speed of reading and comprehension measured. Number of words read in thirty seconds represents speed; number of words correctly expressing ideas contained in the passage represents comprehension. Curve for achievement by grades secured by smoothing the curve which represents the medians of the scores obtained from an application of these tests to 3511 pupils.	Standard scores for grades I-VIII in comprehension given, based on the median scores of pupils tested. Tests given also.
Rice ²	Spelling	1897	Arbitrarily selected words dictated both as single words and in sentences. Also, tests by original composition. Study unscientific; 33000 pupils tested under various conditions.	List of 150-200 words suggested. No definite scale.
Cornman ³	Spelling	1902	Used Rice's column test, vertical list of words, words in sentences, words in a composition, and words written spontaneously for fifteen minutes.	Four column tests and words sentence tests with median scores for grades III-VIII.

¹The Kansas Silent Reading Tests. Bureau of Educational Measurements and Standards. State Normal School. Emporia, Kansas.

²Standards in Rates of Reading. 14th Yearbook of the National Society for the Study of Education. Pp. 44-59.

¹The Measurement of Efficiency in Reading. Journal of Ed. Psych. Vol. 6, Pp. 1-24.

²The Futility of the Spelling Grind. Forum. Vol. XXIII. Pp. 163-172 and 409-419. Scientific Management in Education. N.Y. 1913. Hinds, Noble and Eldridge.

³Spelling in the Elementary School. Boston, 1902. Ginn and Co.

Wallin ¹	Spelling	1911	Two methods used: a composition in which were test words copied by pupils, and a column test, in which occurred one column of forty words for each grade. Grades IV-VIII tested.	Column lists of words offered, but no standard scores affixed.
Buckingham ²	Spelling	1913	5000 words taken from 5 popular spelling books. 270 words selected from this list and submitted to 8791 pupils in grades III-VIII and to 11 grades in New York City. 100 words showing most consistent rise in correct spelling by grades submitted again to large number of pupils and from these, twenty-five word lists selected, ranging from easy to difficult by approximately equal steps.	Tests consisting of twenty-five word lists of gradually increasing difficulty.
Ayres ³	Spelling	1913	Selections made from words spelled by a large number of pupils. Selection of a number of words for each grade, such that 70% of the pupils of any grade could spell all of the words of that grade correctly.	Tests consisting of ten words for each of the grades.

¹Spelling Efficiency. Baltimore, 1911. Warwick and York.

²Spelling Ability, Its Measure and Distribution. Teachers College Contributions to Education. No. 59, 1913.

³The Spelling Vocabularies of Personal and Business Letters. Monograph of the Division of Education of the Russell Sage Foundation, New York. 1913.

Starch ¹	Spelling	1914	First defined non-technical word on each page of Webster's New International Dictionary. 600 of the more common of these selected. These divided by purely random selection, into six 100-word lists; each list of approximately equal difficulty. These lists given to 3500 school children and from the smoothed curves representing these scores standards of achievement for each grade derived.	Six column tests and standard scores for grades II-VIII.
Cook and O'Shea ²	Spelling	1914	A large mass and variety of correspondence examined, and words selected for the lists on the basis of the frequency of their occurrence. Words arranged in three lists in the order of their frequency of occurrence and hence, presumably, the order of their importance.	Three lists of words: (1st. list, 272) (2nd list, 542) (3rd list, 344)
Ayres ³	Spelling	1915	The one thousand most commonly used words in all sorts of writings selected on the basis of their frequencies of occurrence in four comprehensive lists worked out by earlier investigators. These thousand words given as tests to consecutive grades in eighty-four cities (fifty twenty-word lists. Difficulty of each word for each grade determined on basis of scores of seventy thousand pupils in grades II-VIII.	Twenty-six columns of words (A-Z) with the average percentage of correct spellings to be expected of each grade.

¹ The Measurement of Efficiency in Spelling. Jr. of Ed. Psych. Vol. 6, Pp. 167-186.
(Cont. on next page)

R.G. Jones ¹ Vocabulary 1915	Words occurring in ten primers as many as ten times, divided into two lists; phonetic words and sight words. Phonetic words given value corresponding to the number of times it and any other members of the same word-family occurred. Sight words given only the value corresponding to their own occurrence. Thus, a particular value corresponding to the particular word, deducted from the total possible score (the value of the whole list) for each word not recognized.	List of eighty-seven words, with a particular value attached to each.
Haggerty ² Arithmetic 1915	Courtis tests given to approximately nine thousand school children in twenty Indiana cities. Indiana Standard of speed and accuracy ("dependability") proposed on the basis of the medians of these scores for each of the four fundamental arithmetical operations.	Indiana Standard for achievement in Courtis tests.

(Cont.)

²The Child and His Spelling. Indianapolis, 1914. Bobbs-Merrill Co.

³A Measuring Scale for Ability in Spelling. Division of Education of the Russell Sage Foundation. New York, 1915.

¹Reading: 14th Yearbook of the National Society for the Study of Edn. Pp. 37-44.

²Indiana University Bulletin, No. 11. Oct. 1915.

B. Testing the Handwriting Scales. (Including a table of equivalent values on the two scales). Had the writer been able to secure the assistance of a few persons for a longer time he would probably have used one of the analytic scales. A large number of superintendents, however, were willing to devote the time necessary to rate the sample in the Ayres or the Thorndike scale, but none was willing to take the necessary time to rate by such scales as those of Freeman, Gray or Houston. The ratings would obviously have been unreliable as a basis of comparison unless all samples were rated by all persons, and this being possible only by use of the Ayres or Thorndike scale, it was deemed best to select one of these.

First, all of the twelve hundred samples were rated on both of these scales. A group of graduate students in Education at the summer session of the University of Illinois (most of whom were school superintendents) was divided into two sections of ten members each. One section rated the samples on the Ayres scale and the other on the Thorndike scale.

Though the two scales were constructed in different ways (the Ayres scale on the basis of legibility alone and purporting to measure only that one quality), it has been demonstrated with a fair degree of certainty that they do, in practice, measure the same thing, namely, form¹. Other things being practically equal then, it was thought best to use the scale on which the ratings showed the less variability. In order to determine this variability it was necessary to know the ratings on each scale

¹F.N. Freeman: Elementary School Journal, April, 1915, and
F.S. Breed and Vernon Culp: School and Society, October 30, 1915.

in terms of the other. For the purpose of determining this latter point, the writer secured ratings on both scales by a class of nine students in Education at the University of Illinois. Three hundred specimens, including all of the papers in both tests from one third grade, two fourth grades, one fifth grade, and one sixth grade were thus rated. The distribution of these ratings is shown below:

Thorndike Scale	20	30	40	50	60	70	80-Ayres scale
5	1						
6	16	3					
7	118	60	2				
8	123	613	45	2			
9	13	504	348	20			
10		42	222	101	11		
11		5	40	52	23		
12			1	4	7		
13					2	5	1

The median of the ratings on the Thorndike scale falling at any one step of the Ayres scale has been taken as the Thorndike equivalent of that step of the Ayres scale. By this method the following table of equivalent values has been derived.

Ayres-----	20	30	40	50	60
Thorndike-----	8	8.89	9.81	10.66	11.48

The number of samples toward the upper limit of the Ayres scale is of course too small to serve as a basis for equating values. Hence, the table reaches ^{only} as far as 60 on the Ayres scale.

It will be noted that the steps on the Thorndike scale

which correspond to supposedly equal steps on the Ayres scale are almost exactly equal. According to this table one step (e.g., from 30 to 40) on the Ayres scale is equal to nine-tenths of a step (e.g., from 8 to 9) on the Thorndike scale. The step on the Thorndike scale corresponding to the step 50-60 on the Ayres scale shows a slight variation from the consistent increase from step to step in the lower points of the scale. The number of ratings on the Thorndike scale falling under 60 on the Ayres scale, however, is much smaller than the number falling under the lower divisions of the scale and hence not so reliable. It seems safe to conclude from the remarkably consistent values on the Thorndike scale corresponding to the steps on the Ayres scale adequately covered by the above distribution, that one step on the Ayres scale is equal to nine-tenths of a step on the Thorndike scale. In other words, the Ayers scale marks slightly finer divisions or stages of merit in handwriting than does the Thorndike scale.

The writer offers the following table of equivalent values in the two scales, covering the entire range of the Ayres scale:

Ayres scale-----	20	30	40	50	60	70	80	90
values								
Thorndike scale-	8	8.9	9.8	10.7	11.6	12.5	13.4	14.3

Starch has given the following equivalent values on the Ayres and Thorndike scales¹:

Thorndike scale-	7	8	9	10	11	12	13	14
Ayres scale-----	22	31	40	49	58	67	76	85

¹See Journal of Educational Psychology. Oct.1913, Pp.452 and Feb. 1915, Pp. 107.

According to this table of values, one step on the Thorndike scale is equal to nine-tenths of a step on the Ayres scale. On the basis of these equivalent values the conclusion would be that the Thorndike scale marks somewhat finer divisions than the Ayres scale, contrary to the conclusion based on the distribution of ratings in the two scales shown above.

The basis of Starch's tables is the ratings of fifteen samples of children's handwriting by twenty persons (ten business men and ten teachers) on both of the scales. The number of persons rating the samples in Starch's investigation is thus two more than twice the number rating in the present investigation. The number of samples rated in the present investigation was just twenty times the number rated by Starch's judges. The writer believes that the relatively larger number of samples rated and the uniform steps on the Thorndike scale corresponding to equal steps on the Ayres scale justify him in presenting his table of equivalent values, with a good deal of confidence.

In comparing the variability of the twelve hundred handwriting specimens on the two scales, a step on one scale was counted equal to a step on the other. It was found that the ratings of these specimens were more variable on the Thorndike scale in 64.6% of the total number of papers. Although this comparison favored the Ayres scale, another point came out in the form of the distribution shown above which made it impracticable to use the Ayres scale in this particular investigation. The way in which specimens representing a wide range on the Thorndike scale cluster at the lowest step of the Ayres scale points inevitably

to the conclusion that the Ayres scale does not enable one to discriminate between specimens of so low a quality as some of the samples included in the present investigation. For this reason the writer decided to use the Thorndike rather than the Ayres ratings, and the data on handwriting which appear later in this study are based on the ratings in the former scale.

CHAPTER IV.

THE PRESENT INVESTIGATION

A. Aim and General Characteristics.-- The present study differs to a considerable extent in aim and in method from the teacher-rating studies and scales that have been reviewed. The earlier scales have been intended usually to measure a teacher - a person - in all ^{of} his activities and relations. The present study aims to secure a reliable method for estimating the worth of a process. The writer has not attempted to consider all of the qualities which enter into the general efficiency of the teacher. In so far as his form involves the measurement of a teacher, it measures him in one particular phase of his activity; the teaching process. The study is essentially an intensive one, whereas the earlier studies have been comparatively extensive. Earlier students of the problem of teacher-rating have distributed their time and attention over the broad field which is included under the "total efficiency" of the teacher. The writer appreciates the importance of qualities of the teacher which have appeared on earlier scales but which have not been included in the present list. Many of them are qualities which are important in almost any occupation or profession, and undoubtedly are determining factors in the "total efficiency" of the teacher. It has, however, seemed more feasible in following up these pioneer studies to limit the investigation to one division of that "total efficiency"; namely, the classroom work that is involved in the actual teaching process. The method of securing the data, which seemed most reliable, made

it doubly necessary that a comparatively limited phase of the teacher's activities be investigated.

In endeavoring to find a basis for judging teaching efficiency, somewhat different from that of earlier studies, the writer wishes to emphasize the fact that he is not attempting to discredit the work of the earlier investigators, or even to say that such scales are no longer valuable. There is undoubtedly a place for some scale so comprehensive as those of Elliott, Boyce, and Witham. It is unquestionably desirable that a superintendent should have a scale which will help him to estimate the "total efficiency" of his teachers. A scale narrower in scope would obviously be unfair as a basis for salary increase. The "total-efficiency" type of scale is a valuable administrative device, but it is not, ^{and} in the writer's opinion, will not be used generally in the supervision of teaching.

The present list of items has been formulated in the course of an attempt to discover the elements which constitute the worth of the teaching process. It should be used cooperatively by superintendents and teachers: by the former primarily as a basis for suggestions to his teachers, and by the latter as an aid in analyzing their own teaching, in checking their progress from day to day, and in enabling them to cooperate with the superintendent in his efforts toward their improvement.

Any scheme for rating teaching efficiency, to be reliable, must have a reasonable justification for the items which it includes. Further, it is very desirable that the relative values of each of the items should be known at least approximately.

It is necessary, too, that the various items should be so clear and definite that they will not be misunderstood, or understood in different ways by the various people using the scale.

Ruediger and Strayer, and Boyce in his earlier scale, used a comparatively short list of qualities. One of the criticisms which Boyce¹ himself makes of these studies is that they include terms which, unanalyzed, may vary in their meaning according to the people using the scale. Such terms are "personality" and "teaching skill".

In his later study, Boyce presents a much more carefully prepared list of qualities, which is at the same time a much longer one. The scales of Elliott and Witham and this revised scale of Boyce have a very long list of items. They are not to any great extent subject to the criticism just quoted from Boyce, but the great number of items included makes them rather cumbersome in use, and still further complicates the process of evaluating the items by any other than an arbitrary method. Only one principal among thirty, in replying to a questionnaire in regard to the scales for teacher-rating in use, reported that he was using the Elliott scale. He adds, "Personally, I am inclined to summarize the Elliott scheme, because I find it hard to estimate each element". The present scale has the advantage of a comparatively small number of items. At the same time it is free, with one possible exception, from the blanket terms which have been adversely criticized in earlier scales, and in the case of this

¹14th Yearbook of the National Society for the Study of Education.
Part II, P. 43.

questionable term the suggestive topics which are placed under it practically remove the chance of misunderstanding. This item, "governmental skill", was taken Elliott's scale: The same term was used by Boyce in his first investigation.

B Method of the Investigation-- 1. Determining the Items which should Compose the Rating Form.- As a preliminary step in securing the items for the scale the writer made a careful study of literature on the subject of teacher-rating (including the studies previously mentioned), as well as a careful examination of many of the local schemes in use. A tentative list of twelve qualities was first formulated. This list was presented before a conference of eighteen people, and there discussed for two hours. Four of the people present at this meeting were university professors of education. The others were interested in educational problems and most of them were schoolmen of some experience¹. As a result of this conference a number of items were dropped, several others were formulated in slightly different terms, and several new items were added. The items of the scale, as finally formulated and used in rating, represent very closely the concensus of opinion of these men in regard to the elements which constitute good teaching in the elementary school.

¹For a list of these men, see the Appendix.

The form used in the thirteen schools investigated is shown below:

Scale for Rating Qualities of Classroom Efficiency in Elementary School Teachers

	Excellent	Good	Fair	Poor	Very Poor
1. Speech-					
(Modulation)					
Check (Clearness of Enunciation)					
"good or bad" (Rate)					
(Quality (Nasal					
(Throaty					
2. Governing Skill					
Check (a) Cheerfulness					
(b) Naturalness					
(c) Constrained obedience					
(d) Disobedience					
3. Use of English					
Check (a) By teacher					
"good" or "bad" (b) By pupils					
4. Skill in organization of material of the recitation					
5. Ability to fix the recitation in its proper setting in the course, i.e., making the proper connections with preceding and with following recitations					
6. Proper Stressing of relative values, i.e. distinguishing fundamental from accessory					
7. Skill in Habit-formation					
8. Skill in questioning					
(a) Thought-provoking					
(b) Clear					
(c) Too many					
(d) Too difficult					
(e) Irrelevant					
(f) Suggesting the answer					
9. Skill and care in assignment					
10. Choice of illustrative material					
School					
Teacher					
Grade					
Date					

Items 3, 4, 5, 6, 8, and 10, are factors so obvious and invariable in the normal recitation that they hardly need justification in a list of items which is to be used in investigating the efficiency of teaching. Assignment certainly means a quite different thing in the lower grades from what it means in the higher grades, and this was taken into account by the persons who used the form. It is a necessary part of the recitation, though, even in the lower grades. Choice of illustrative material, too, varies very much in importance with the subject of study. The judges were obliged to use their discretion in regard to how much to deduct from a score of "excellent" on account of the inadequacy of the illustrative material in any particular recitation. "Skill in Directing Habit Formation" might easily be confused with "Governing Skill". The same act on the part of a pupil might be considered at one time due to the teacher's lack of ability in directing habit-formation, and at another time as due to his lack of governing skill. The determining factor in such cases must be the apparent intention or attitude of the pupil. If a pupil habitually leans against his desk on recitation and no notice is taken of the fact by the teacher, the fault is accounted due to a lack of ability in directing habit-formation. The same act might in other cases be done in spite of the teacher's evident wishes to the contrary. When such things are done in defiance or surreptitiously they are accounted due to the teacher's lack of governing skill. Governing ability is not here understood as merely negative or repressive in its

results. The teacher who controls chiefly by repressing is not a good disciplinarian. He will accomplish the highest type of government or discipline only when he inspires his pupils with a respect for learning, and to do this he must not only make the work worth while, but he must make the pupils feel that it is worth while.

There was considerable doubt at first as to the propriety of including Speech as one of the items of the list. After preliminary testing, however, it was decided that this should be included. Its importance to any recitation is large and unquestionable. When the teacher's voice is poor in any of the qualities which occur under the head of Speech the effect upon the success of the recitation is very likely to be felt. As one of the items of the scale, speech has the advantage of being always present in the recitation. Again there is little danger that two judges using the scale will consider different things in rating under this head, with the suggestive sub-headings. The sub-topics were added under items 1, 2, 3 and 8, simply as suggestions to the person using the scale, as to the particular points for which he should look in forming his estimate of the item.

2. Method of Rating. Boyce has pointed out, as one of the "fundamental needs for the final solution of the problem of rating teaching efficiency that we must have command of situations in which two or more officials may test, on the same body of teachers, whatever method is employed, In the present investi-

gation the plan adopted was to have the writer and one other person rate each teacher in the two school systems twice, with an interval between the ratings. As many as four ratings were not secured for every teacher, but this was the aim, and no teacher was rated less than twice. The author rated each teacher in the two cities twice, with the exception of one school. In this case examinations were in progress when he made his second visit, and hence it was impossible to secure a satisfactory rating on teaching. The several ratings were desired in order to eliminate the element of chance which might sometimes make a single rating misleading. It was thought that the average of a number of ratings would represent a fairer estimate of the teaching, and that any correlations that might be worked out between such ratings in any of the items, and any more general test would be, in so far as the items are concerned, more reliable.

In Boyce's first investigation the superintendents made the rankings in the particular qualities of the scale and then made a general ranking (a ranking on the "total efficiency" of each teacher). For two reasons this plan of procedure was modified in the present investigation. The writer wished to have the ratings based on specifically observed classroom work rather than past impressions, and he hesitated to ask the superintendents to take the time necessary to make such ratings. (Such a request was made later, with good results, as is shown in one of the following chapters of the study). Again, it was thought that in having the general ratings and the scale ratings made by different

persons, any correlations which might be worked out between the two might be more nearly free from error. In other words, it was hoped to avoid whatever chance there might have been in the earlier method, of making the general rating too much like a summary of the detailed ratings on the scale.

The superintendents were first asked simply to distribute their teachers into five groups: Excellent, Good, Fair, Poor, and Very Poor. It was explained to them that Excellent should include the exceptionally strong teachers; Fair, the average teachers; and Very Poor, the exceptionally weak and unsatisfactory teachers. The following distribution of the teachers in these two school systems shows what is probably a general tendency among superintendents to rank their teachers high in the scale of ability.

	Excellent	Good	Fair	Poor	Very Poor
Superintendent of City B	15	12	3	0	0
Superintendent of City P	18	19	18	1	0

While it was thought best to have the ratings made on different recitations by the different judges, in order to get a fair average estimate of the teaching ability, it was also thought necessary to test in some way the extent to which each item on the scale, in practice, mean the same thing to different people using it, and hence the extent to which independent ratings by it are comparable. In order to test the scale on this point, the writer persuaded a superintendent of many years experience in

practical supervision (at present a graduate student in Education at the University of Illinois), to rate with him the teaching in seven rooms of an elementary school. After discussing the ten items on the scale the two men visited the same recitations, each making his rating independently of the other. The ratings were made on a scale of ten; "1" representing "Excellent"; "2-3", "Good"; "4-5-6-7", "Fair"; "8-9", "Poor"; and "10", "Very Poor". The ratings correspond rather closely, as shown in the following table.

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7
Judges-----	H--J	H--J	H--J	H--J	H--J	H--J	H--J
Scale							
Ratings 1	3--2	3--3	4--6	5--3	3--2	3--2	7--7
2	2--2	3--2	4--3	3--2	3--2	4--4	6--5
3	3--6	4--3	3--7	2--3	3--5	3--2	6--6
4	4--2-	4--2		6--3	3--4	6--5	7--6
5							
6	2--4	3--2		6--3	3--5	4--4	7--7
7	3--3	3--3	5--2	5--6	4--6	5--5	4--6
8	3--2	3--2	5--3	4--3	3--5	3--4	5--7
9			8--7				8--9
10	6--2	4--2		6--4		6--4	

In only two instances do the ratings of the two judges differ by as much as 0.4 of the range; in four instances, by 0.3; in fifteen instances, by 0.2; in twenty-two instances, by 0.1; and in ten instances they exactly coincide. This correlation is close. The writer had rated some of these teachers before, and it is quite possible that his ratings in this instance were to

some extent influences by impressions gained in former ratings. The correlation between the two series of ratings shown here might have been still closer had he known absolutely nothing of the work of these teachers, as was the case with the other person who rated. Both judges found it extremely difficult to distinguish ten degrees of ability. Had only five divisions been used, as in the earlier testing, the correlation between the judgments would have appeared much closer. Between the ratings, as they appear on the preceding page, the correlation is 0.63¹. The correlation between ratings similarly made on the rating form of Ruediger and Strayer was 0.25.

3. Use of Objective Tests. In the earlier studies in the field of teacher-measurement some attempt has usually been made to include an item which would show in a more or less objective way the effect of the teaching process. Elliott puts as a sub-topic, "Examinations; rate and amount of progress of pupils". Boyce includes in his list "Growth of the pupil in subject matter". He suggests that "Superintendents wanting to get at the facts more accurately might break up the topic into growth in specific kinds of subject matter". This refinement of the process has been attempted in the present study. As tests could not be given in all subjects, it was necessary to choose from among those worked out, the particular tests which seemed most practicable and best established. In deciding this matter, the author made

¹ Woodworth Percentage of Displacement Method of Correlation. See Whipple: Manual of Mental and Physical Tests, p.38, for the formula.

a careful analysis of the tests which have so far been worked out for elementary school subjects. On the basis of this analysis and an examination of the critical literature on the subject of tests, it was finally decided to use the Courtis Tests. Both the Ayres and Thorndike handwriting scales were used throughout finally, but the scores on the Thorndike scale were employed in calculating the correlations, as the range of merit measured by the Ayres scale seemed too limited.

Samples of handwriting were secured from all of the pupils in grades III-VI, inclusive, in one city and in grades IV-VII, inclusive, in the other city. These samples were taken early in April. Each pupil was told to write the following at his ordinary rate: "Mary had a little lamb, Its fleece was white as snow", omitting punctuation¹. The teachers were carefully directed as to the method of securing the samples and as to the necessity for complete uniformity in method throughout the schools. Eight weeks after the first samples had been taken another set of samples was secured in the same way^{1a}.

The Courtis Arithmetic Tests (Series B, Form 2) were given to all of the pupils in grades IV-VI, inclusive, in one city and in grades III-VII, inclusive, in the other city. In one city, the interval between the two tests was seven weeks; in the other four weeks². In one city the teachers had given the tests the

¹Samples of fast and slow writing were also collected, but these were not rated, as it appeared on examination that most of the pupils, in spite of directions to the contrary, wrote at approximately the same rate in all of the three instances.

^{1a}Owing to a misunderstanding between the investigator and the superintendent in one of the cities the second set of samples, which was to have been collected at the end of the school year was not taken. Hence the first set of samples from this city (Cont. on next page)

preceding term, and in view of this fact were allowed to give both of the tests in the present investigation. In the other city the first set of tests was given by graduate students in education, in the presence of the teachers. The teachers were then allowed to give the second set of tests.

The writer, with the help of one other person who had had training in statistical methods, scored each of the rooms from the individual scores sent in from all the schools. The scores were calculated in "rights" according to the method suggested by Courtis. Hence, the progress of the pupils in the Courtis Tests under any teacher is represented by the median number of rights scored by the pupils in her room in the second test minus the median number of rights scored in the first test.

When a gain or loss was shown between the two handwriting tests it was practically always represented by one step of the scale. Hence, the improvement or loss in any room is calculated in terms of the per cent of the total number of pupils in the room making a gain or loss; i.e., if 40% of the pupils gain in the second test, 40% neither gain nor lose, and 20% lose, the rank of that room will be represented by 20% (40% gain minus 20% loss). When "-" precedes the per cent, it is to be understood as representing a loss.

4. Scope of the Investigation. The present investigation was carried out in the thirteen elementary schools in

(Cont.)

was useless in measuring progress.

²In order to make the results in the two cities comparable, the author has resorted to a method which to some may seem questionable. The gain or loss in any instance in four weeks he has multiplied by $\frac{7}{4}$ when comparing with the change in the other city over a period of seven weeks.

two cities of Illinois; one having a population of about ten thousand and the other a population of about sixteen thousand. The total number of teachers included in this study is 86, and the number of pupils, 2895. The number of teachers is not large, but the time spent in observing the work of each teacher is, in the writer's opinion, much more significant than mere number of teachers would have been. The judges usually remained in a room throughout an entire recitation and frequently longer. The recitation periods varied in length, 25 minutes probably being a fair estimate of the average time required to secure each of the 233 ratings.

The Courtis tests were given to 1693 pupils. Hand-writing specimens were secured in the first sampling from almost as many, but owing to the fact that the last set of samples was not collected in one of the cities, the number whose progress could be measured was 532.

5. Cooperators. All who cooperated with the writer in making the ratings were students of Education¹. Two of them were men of experience in school work. One of them had had seven years' experience as a teacher, two years as a school superintendent, and had done two years of graduate work in Education. All of these men discussed the form before using it in rating, making sure that the items would be consistently interpreted in the investigation. It was therefore not necessary to depend at all on written instructions.

¹J. H. Hanger, Assistant in Education, University of Illinois
G. W. Marshall, Student in Education, University of Illinois
C. B. May, Student in Education, University of Illinois

CHAPTER V.

THE DATA

The data gathered concerning each teacher are presented in the following tables.

The figures under the column of average ratings for each teacher represent the average of all of the ratings on all of the items. The first number under "supt's rating" represents the superintendent's last rating (on a scale of 1 to 10): the second number represents his first rating (on a scale of 1 to 5). Under the last two columns at the right are shown the gains and losses in arithmetic and handwriting, respectively. Under "Arith." the first figures in each case are for addition; the second, for subtraction; the third, for multiplication; and the last for division. Under "handwr." is shown the per cent of pupils gaining, minus the per cent losing where the gain is greater than the loss, and the per cent losing minus the per cent gaining where the loss is greater than the gain. "-" is always to be understood as indicating a loss.

SCHOOL H

City B

Teacher I

Items	Ratings	Av.	Supt's Rating	Training	Experience	Grade Taught	Salary	Arith.	Handwr.
1	---2-2-2-2	2.							
2	---3-2-3-1	2.2							
3	---2-3-2-3	2.5							
4	---3-3-2-2	2.5	1 1	Normal	B. total	4	75		
5	---3---2	2.3		Training	13 21	&			
6	---2-3---1	2				5			
7	---3-3-2-2-	2.5							
8	---2-3-2-1	2.							
9	-----1	1.							
10	---4---1	<u>2.5</u>							
		2.2							

Teacher II

1.	---2-2-2-2	2.							
2	---2-2-2-2	2.							
3	---2-4-2-4	3.							
4	---2-2-3-3	2.5	2 2	Normal	5 10	1	65		
5	-----3	2.5		Grad.					
6	---2-2---2	2.							
7	---2-2-3-2	2.2							
8	---1-2-2-2	1.2							
9	---2-2---2	2.							
10	---2-2---3	<u>2.3</u>							
		2.2							

Teacher III

1	---2-2-2-3	2.2							
2	---2-2-2-3	2.2							
3	---2-3-2-3	2.5							
4	---2-2-3-4	2.7	2 2	Normal	1 9	3	57.50		
5	---2-3---4	3.		Training					
6	---2-3-2-4	2.7							
7	---2-3-2-3	2.5							
8	---2-2-2-3	2.2							
9	---3-----	3.							
10	---4---4	<u>4.</u>							
		2.7							

Teacher IV

1	---2-4-2-4	3.							
2	---2-2-2-3	2.2							
3	---2-3-2-3	2.5							
4	---2-4---3	3.	4 3	Normal	1 3	2	55		
5	---2-4---3	3.		Grad.					
6	---4-2-4	3.3							
7	---2-3-2-3	2.5							
8	---2-3-2-4	2.7							
9	---2-----4	3.							
10	---2-4---5	<u>3.7</u>							
		2.6							

SCHOOL K

City B

<u>Teacher I</u>									
Items	Rating	Av.	Supt's Rating	Training	Experience	Grade Taught	Salary	Arith.	Handwr.
1	---2-3----	2.5							
2	---3-3----	3.							
3	---3-4----	3.5							
4	---4-4----	4.	3 3	Univ.& Normal Grad.	B. total 6 8	2	65		
5	---4-4----	4.							
6	---4-4----	4.							
7	---4-3----	3.5							
8	---3-4----	3.5							
9	---5-4----	4.5							
10	---4-5----	4.5							
		<u>3.7</u>							

<u>Teacher II</u>									
1	---2-2----	2.							
2	---2-2----	2.							
3	---2-2----	2							
4	-----		1 1	Normal Grad.	1 4	4	60	-1.4	-8%
5	---2-2----	2.						.4	
6	---2-2----	2.						1.6	
7	---2-2----	2.						.2	
8	---3-2----	3.							
9	---3-2----	3.							
10	---4-2----	3.							
		<u>2.3</u>							

<u>Teacher III</u>									
1	---2-2----	2.							
2	---3-2----	2.5							
3	---2-2----	2.							
4	---4-2----	4.	3 2	Normal Grad.	2 5	4	57.50	- .8	-6%
5	---4-2----	4.						3.	
6	---4-2----	4.						1.	
7	---3-2----	2.5						3.	
8	---2-3----	2.5							
9	---4-4----	4.							
10	---4-4----	4.							
		<u>3.2</u>							

<u>Teacher IV</u>									
1	---4-4----	4.							
2	---3-4----	3.5							
3	---2-3----	2.5							
4	---4-3----	3.5	2 1	Normal Grad.	7 15	5 & 6	65	2.	-25%
5	---3-3----	3.						2.4	
6	---4-2----	3.						3.8	
7	---3-4----	2.5						2.3	
8	---4-3----	3.5							
9	-----								
10	---4-4----	4.							
		<u>3.4</u>							

SCHOOL K (Cont'd)

City B

Teacher V

Items	Rating	Av.	Supt's Rating	Training	Experience B. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2	2.							
2	---2-2	2.							
3	---2-2	2.							
4	---1-2	1.5	2 1	Normal	1	6	6	90	4.2
5	---2-2	2		Grad.					-4.2
6	---2-2	2.							-3.6
7	---2-2	2.5							-3.2
8	---4-2	1.5							
9	---4-3	3.5							
10	---1-3	2.							
		<u>2.1</u>							

Teacher VI

1	--2	2.							
2	--2	2.							
3	--3	3.							
4	--2	2	1	1	Normal	II	23	3	65
5	--2	2.			Training				
6	--2	2.							
7	--2	2.							
8	--2	2.							
9	--2	2.							
10	--2	<u>2.</u>							
		2.1							

Teacher VII

1	---	2	2.						
2	---	2	2.						
3	---	3	3.						
4	---	3	3.	2	2	Normal	2	10	2
5	---	3	3.			Training			&
6	---	3	3.						3
7	---	2	2.						
8	---	2	2.						
9	---	4	4.						
10	---	3	3.						
			<u>3.</u>						
			2.7						

Teacher VIII

1	--3-2	2.5								
2	--3-2	2.5								
3	--3-4	3.5								
4	--4-3	3.5	2	1	Normal &	1	3	1	57.50	
5	--3-2	2.5			College					
6	--3-2	2.5			Grad.					
7	--3-3	3.								
8	--3-2	2.5								
9	--4-2	3.								
10	--4-3	<u>3.5</u>								
		2.9								

SCHOOL K (Cont'd)

City B

Teacher IX

Items	Rating	Av.	Supt's Rating	Training	Experience B. total	Grade Taught	Salary	Arith.	Handwr
1 ---2		2.							
2 ---2		2.							
3 ---3		3.							
4 ---4		4.	2 1	Normal	1 4	1	60		
5 ---3		3.		Grad.					
6 ---4		4.							
7 ---3		3.							
8 ---4		4.							
9 ---4		4.							
10 ---4		4.							
		<u>3.3</u>							

Teacher X

1 ---1-2		1.5							
2 ---2-2		2.							
3 ---2-2		2.							
4 ---2-2		2.	3 2	Normal	11 18	5	65	-.4	
5 ---2-2		2.		Training				2.6	
6 ---2-3		2.5						-.8	
7 ---2-2		2.						-.4	
8 ---2-3		2.5							
9 ---3-3		3.							
10 ---2-4		3.							
		<u>2.3</u>							

SCHOOL L

City B

Teacher I

Items	Rating	Av.	Supt's Rating	Training	Experience B. total	Grade Taught	Salary	Arith.	Handwr.
1 ---2-2		2.							
2 ---2-2		2.							
3 ---2-2		2.							
4 ---2-3		2.5	1 1	Normal	1 7	5	60	1.2	37%
5 ---2-3		2.5		Training				-2.4	
6 ---2-3		2.5						-2.4	
7 ---2-2		2.						2.2	
8 ---2-3		2.5							
9 ---2-3		2.5							
10 ---2-4		2.5							
		<u>2.4</u>							

Teacher II

1 ---3-4		3.5							
2 ---4-3		3.5							
3 ---3-3		3.							
4 ---4-2		3.	4 2	Normal	4 8	4	60		-6%
5 ---4-2		3.		Training					
6 ---4-2		3.							
7 ---3-4		3.5							
8 ---4-2		3.							
9 ---4		4.							
10 ---4-2		3							
		<u>3.3</u>							

SCHOOL L (Cont'd)

City B

Teacher III

Items	Rating	Av.	Supt's Rating	Training	Experience B. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-4	3.5							
2	---3-2	2.5							
3	---2-3	2.5							
4	---2-3	2.5	2 2	Normal	2 6	2	57.50		
5	---3-3	3.		Grad.					
6	---2-2	2.							
7	---2-2	2.							
8	---2-2	2.							
9	---3--	3.							
10	---2--	2.							
		<u>2.5</u>							

Teacher IV

1	---2-3	2.5							
2	---3-3	3.							
3	---3-3	3.							
4	---3-3	3.	1 1	Normal &	15 15	6	90	.4	5%
5	---4-4	4.		College					
6	---3-2	2.5		Training					
7	---3-3	3.							
8	---3-3	3.							
9	---3-4	3.5							
10	---4-4	4.							
		<u>3.2</u>							

Teacher V

1	---2-3	2.5							
2	---2-2	2.							
3	---3-3	3.							
4	---2-4	3.	2 1	Normal	21 21	3	65		64%
5	---2-4	3.		Training					
6	---2-4	3.							
7	---2-3	2.5							
8	---2-3	2.5							
9	---2-3	2.5							
10	---3-4	3.5							
		<u>2.8</u>							

Teacher VI

1	---4-4	4.							
2	---3-3	3.							
3	---3-4	3.5							
4	---4-3	3.5	1 1	Normal	6 11	1	65		
5	---4-4	4.		Grad.					
6	---5-4	4.5							
7	---3-3	3.							
8	---3-4	3.5							
9	---5-3	4.							
10	---4-4	4.							
		<u>3.7</u>							

SCHOOL L (Cont'd)

City B

Teacher VII

Items	Rating	Av.	Supt's Rating	Training	Experience B total	Grade Taught	Salary	Arith.	Handwr.
1 ---3-4		3.5							
2 ---3-3		3.							
3 ---2-3		2.5							
4 ---2-3		2.5	2 2	Normal	1 7	5	57.50	3	-4%
5 ---3-3		3		&		&		3.8	
6 ---3-3		2.		College		6		-3.2	
7 ---3-3		3.		Training				1.4	
8 ---2-3		2.5							
9 ---3-3		3.							
10 ---3-2		2.5							
		<u>2.8</u>							

SCHOOL W

City B

Teacher I

Items	Rating	Av.	Supt's Rating	Training	Experience B total	Grade Taught	Salary	Arith.	Handwr.
1 ---4-3-4-3		3.5							
2 ---2-2-3-3		2.5							
3 ---4-3-2-2		2.6							
4 ---2-3-3-4		3.	1 1	Normal	4 7	4	65	-2.	46%
5 ---2---3-3		2.7		Grad.				-2.	
6 ---2-2-3-3		2.5						-3.6	
7 ---2-2-2		2.						-. 6	
8 ---2-2-3-3		2.5							
9 ---2-2-3		2.3							
10 ---1-2-3-4		2.5							
		<u>2.6</u>							

Teacher II

1 ---2-2-2-3		2.2							
2 ---2-2-1-3		2.							
3 ---2-2-2-3		2.2							
4 ---2-3-3-4		3.	1 1	Normal	10 18	1	65		
5 ---2-3---4		3.		Training					
6 ---2-3-3-4		3.							
7 ---3-3-2-2		2.5							
8 ---2---2-3		2.3							
9 -----3-3-4		3.3							
10 ---1---4-4		3.							
		<u>2.7</u>							

Teacher III

1 ---2-1-2-1		1.5							
2 ---2-2-2-1		1.7							
3 ---3-3-2-2		2.5							
4 ---2-2---2		2.	1 1	Normal	3 10	3	57.50		14 %
5 ---2-1---2		1.7		Training		&			
6 ---2-1-2-2		1.7				4			
7 ---2-1---2		1.7							
8 ---2-1---2		1.7							
9 ---2-1---2		1.7							
10 ---2-1---2		1.7							
		<u>1.8</u>							

SCHOOL W (Cont'd)

City B

Teacher IV

Items	Rating	Av.	Supt's Rating	Training	Experience B total	Grade Taught	Salary	Arith.	Handwr.
1	---3-2-2-3	2.5							
2	---3-3-3-3	3.							
3	---4-4-2-2	3							
4	---4-3-3	3.3	3 2	Normal	11 18	1	65		
5	---4-3-3-3	3.2		Training					
6	---4-2-3	3.							
7	---4-3-3-3	3.2							
8	---4-3-3	3.3							
9	---4-3-3	3.3							
10	---4-3-3-2	3.							
		<u>3.1</u>							

Teacher V

1	---1-3-3-3	2.5							
2	---2-3-3-2	2.5							
3	---2-3---2	2.3							
4	---2-2-3-3	2.5	4 3	Normal	2 7	5	57.50	-1.	7%
5	---2-2---3	2.3		&				4.4	
6	---2-2-3-3	2.5		College				5.8	
7	---2-3-3-3	2.7		Training				5.8	
8	---2-3-3-2	2.5							
9	---2-3-3-3	2.7							
10	---2-2-3-2	2.2							
		<u>2.5</u>							

Teacher VI

1	---2-2-2-2	2.							
2	---3-2-2-2	2.2							
3	---3-2-2-2	2.2							
4	---2-3-3-3	2.7	3 2	Normal	1 4	6	90	2.2	-9%
5	---2-2-3-2	2.2		Grad.				-4.	
6	---2-2-3-3	2.5						3.4	
7	---3-2-1-2	2.						0.	
8	---2-2-3	2.2							
9	-----2	2.							
10	---2---3-2	2.2							
		<u>2.2</u>							

Teacher VII

1	---2-4-3-3	3.							
2	---2-3-3-3	2.7							
3	---3-3-2-2	2.5							
4	---2-3-4-4	3.2	3 2	Normal	5 19	3	62.50		7%
5	---3-4-3	3.3		Training					
6	---2-3-4-3	3.							
7	---2-3-4-3	3.							
8	---3-3-4-3	3.2							
9	-----4	4.							
10	---4---4	4.							
		<u>3.2</u>							

SCHOOL W (Cont'd)

City B

Teacher VIII

Items	Ratings	Av.	Supt's Rating	Training	Experience B. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-2-2-3	2.5							
2	---2-2-2-2	2.							
3	---3-2-2-2	2.2							
4	---3-3-2-3	2.5	2 2	Normal	3 13	5	62.50	-1.	
5	---3-3-3-3	3.		&		&		1.	
6	---4-3-3-3	3.2		College		6		-1.2	
7	---3-3-5-2	3.2		Training				.2	
8	---3-3-2-3	2.7							
9	---4-4-3	3.5							
10	---4-4-3	2.7							
		2.9							

Teacher IX

1	---2-2-2-2	2.							
2	---2-3-2-2	2.2							
3	---2-3-2-2	2.2							
4	-----1-2	1.5	2 1	Normal	2 9	2	60		
5	-----2-2	2.		Training					
6	-----1-2	2.5							
7	---3-3-3-3	3.							
8	-----2-2	2.							
9	-----3-2	2.5							
10	-----2-3	2.5							
		2.1							

SCHOOL A

City P

Teacher I

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---4-2	3.							
2	---2-1	1.5							
3	---2-2	2.							
4	---		2 3	Normal					
5	---2	2.		Training	11 19	3	70	.2	
6	---3	3.						.3	
7	---2-2	2.							
8	---2-2	2							
9	---4	4.							
10	---2-3	2.5							
		2.5							

Teacher II

1	---3-2	2.5							
2	---3-2	2.5							
3	---3-2	2.5							
4	---4-2	3.	2 3	High	10 14	5	70	-1.1	
5	---4-2	3.		School				4.4	
6	---4-2	3.		Training				.5	
7	---3-1	2.						1.4	
8	---4-2	3.							
9	---5	5.							
10	---4-2	3.							
		3.							

SCHOOL A

City P

Teacher III

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2	2.							
2	---2-2	2.							
3	---3-2	2.5							
4	---2-2	2.	3 2	Normal	7	8	7	65	1.3
5	---3-2	2.5		Training					2.
6	---3-2	2.5		&					.7
7	---2-3	2.5		Univ.					-1.6
8	---3-2	2.5		Grad.					
9	-----4	4.							
10	---4-2	3.							
		<u>2.6</u>							

Teacher IV

1	---1-2-2	1.7							
2	---2-2-2	2.							
3	---2-3-2	2.3							
4	---2-3-3	2.7	1 1	Univ.	1	1	4	55	1.2
5	---3-3-2	2.7		Grad.					1.5
6	---2-2-2	2.							.7
7	---2-4-2	2.7							-.2
8	---2---3	2.5							
9	---2---4	3.							
10	---2	2.							
		<u>2.4</u>							

Teacher V

1	---1-2	1.5							
2	---3-2	2.5							
3	---3-3	3.							
4	-----3	3.	3 3	Univ.	4	7	6	60	-.4
5	-----	---		Grad.					-.9
6	---3-2	2.5							1.8
7	---3-2	2.5							.5
8	---3-2	2.5							
9	---4	4.							
10	---4	4.							
		<u>2.8</u>							

Teacher VI

1	---2-1	1.5							
2	---3-1	2.							
3	---3-2	2.5							
4	---3	3.	2 1	Univ.	8	11	7	80	
5	---3	3.		&					
6	---4-3	3.5		Normal					
7	---2-3	2.5		Grad.					
8	---3	3.							
9	---5-3	4.							
10	---4	4.							
		<u>2.9</u>							

SCHOOL A (Cont'd)

City P

<u>Teacher VII</u>									
Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-1	1.5							
2	---1-1	1.							
3	---2-2	2.							
4	---3	3.	2 2	Normal	2	2	2	60	
5	---3	3.		Training					
6	-----2	2.							
7	---2-1	1.5							
8	---3-2	2.5							
9	---3-2	2.5							
10	---3	3.							
		2.5							

Teacher VII

1									
2									
3									
4			1 1	Univ.	9	21	1	70	
5				Training					
6									
7									
8									
9									
10									

SCHOOL B

City P

Teacher I

Items	Ratings								
1	---3-2-3	2.3							
2	---4-3-5	4.							
3	---3-4-4	3.7							
4	---3-3-5	3.7	1 1	Normal	12	13	8	80	
5	---3-3-3	3.		Grad.					
6	---4-4	4.							
7	---3-4	3.5							
8	---4-4-5	4.3							
9	---3-3	3.							
10	---4-4-3	3.7							
		3.6							

Teacher II

1	---1-1-2	1.3							
2	---2-1-2	1.7							
3	---3-2-3	2.7							
4	---4-4-3	3.7	2 3	High	13	25	8	85	
5	---4-4-3	3.7		School					
6	---4-4-3	3.7		Grad.					
7	---2-2-2	2.							
8	---3-3-3	3.							
9	---3-2-3	2.7							
10	---4-3-4	3.7							
		2.8							

SCHOOL B (Cont'd)

City P

Teacher III

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---1-2-2	1.7							
2	---2-3-2	2.3							
3	---3-3-4	3.3							
4	---3-4-3	3.3	2	3	High School Training	14	18	8	85
5	---3-4-2	3.							
6	---3-4-2	3.							
7	---2-3-2	2.3							
8	---3-3-3	3.							
9	---4-4-4	4.							
10	---4-3-4	<u>3.7</u>							
		3.							

Teacher IV

1	---2-3-2	2.3							
2	---1-2-3	2.							
3	---3-3-3	3.							
4	---3-4-4	3.5	1	1	Univ. Training	1	25	8	100
5	---3-3-3	3.							
6	---2-3-3	2.5							
7	---2-2-3	2.3							
8	---2-2-3	2.5							
9	---3-4-4	3.5							
10	---2-4-3	<u>3.</u>							
		2.8							

Teacher V

1	---2-3	2.5							
2	---1-3	2.							
3	---2-3	2.5							
4	---2-3	2.5	2	2	Univ. Training	13	15	8	80
5	---2-3	2.5							
6	---2-3	2.5							
7	---2-3	2.5							
8	---2-3	2.5							
9	---4-4	4.							
10	---4-4	<u>4.</u>							
		2.8							

SCHOOL C

City P

Teacher I

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2	2.							
2	---2-1	1.5							
3	---3-2	2.5							
4	---3-2	2.5	2	2	High School Training	1	3	2	55
5	---3-2	2.5							
6	---2-1	1.5							
7	---2-1	1.5							
8	---2-1	1.5							
9	---2-1	1.5							
10	---3-3	<u>3.</u>							
		2.							

SCHOOL C (Cont'd)

City P

Teacher II		Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
Items	Ratings								
1	---2-1	1.5							
2	---2-1	1.5							
3	---3-3	3.							
4	---2-2	2.	2 2	Univ. Training	2 20	4	70	-.1	
5	---2-2	2.						1.3	
6	---2-2	2.						.5	
7	---2-2	2.						2.	
8	---2-2	2.							
9	---								
10	---3	3.							
		2.1							

Teacher III

1	---2-2	2.							
2	---2-2	2							
3	---3-4	3.5							
4	---3	3.	1 2	Normal Training	5 13	1	70		
5	---3	3.							
6	---2-2	2.							
7	---2-3	2.5							
8	---2-2	2.							
9	---3-4	3.5							
10	---4	4.							
		2.8							

Teacher IV

1	---3-3	3.							
2	---2-2	2.							
3	---3-2	2.5							
4	---2-3	2.5	1 1	High School Training	3 9	3	60		
5	---3-2	2.5							
6	---2-2	2.							
7	---2-2	2.							
8	---1	1.							
9	---2-2	2.							
10	---1	1.							
		2.1							

SCHOOL G

City P

Teacher I

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-1	2.							
2	---3-1	2.							
3	---3-3	3.							
4	---4-4	4.	1 1	High School Grad.	1 8	7	55	-.4	
5	---4-3	3.5						.7	
6	---3-3	3.						0.0	
7	---3-2	2.5						2.4	
8	---2-3	2.5							
9	---4-4	4.							
10	---4-4	4.							
		3.1							

SCHOOL G (Cont'd)

City P

<u>Teacher II</u>											
Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.		
1	---3-2	2.5									
2	---2-2	2.									
3	---3-3	3.									
4	---3-3	3.	2 2	Normal	1 2	5	55				
5	---3-3	3.		Grad.		&					
6	---3-2	2.5				6					
7	---3-3	3.									
8	---3-2	2.5									
9	---3	3.									
10	-----										
		2.7									

<u>Teacher III</u>											
1	---2-2-2	2.									
2	---2-2-2	2.									
3	---3-3-3	3.									
4	---4-4-3	3.7	2 1	Normal	2 10	4	60	.5			
5	---4-4-3	3.7		Training				3.			
6	---3-3-3	3.						-.6			
7	---4-4-2	3.3						-.5			
8	---4-4-4	4.									
9	---4-4	4.									
10	---4-4-4	4.									
		3.3									

<u>Teacher IV</u>											
1	---3-2	2.5									
2	---2-2	2.									
3	---3-3	3.									
4	---4-4	4.	2 2	Normal	1 1	3	55	1.4			
5	---3-4	3.5		Grad.				2.3			
6	---3-4	3.5									
7	---3-3	3.									
8	---3-4	3.5									
9	---3	3.									
10	---4-5	4.5									
		3.3									

<u>Teacher V</u>											
1	---4-2	3.									
2	---3-2	2.5									
3	---4-4	4.									
4	---4-2	3.	1 1	Normal	6 18	5	65	-.8			
5	---4	4.		Training				1.3			
6	---4-2	3.						1.			
7	---3-2	2.5						1.			
8	---3-2	2.5									
9	---3	3.									
10	---4-3	3.5									
		3.1									

SCHOOL G (Cont'd)

City P

Teacher VI

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-2	2.5							
2	---3-3	3.							
3	---3-3	3.							
4	---4	4.	2 3	Normal	1 1	1	55		
5	---3	3.		Training		&			
6	---3-4	3.5				2			
7	---3-3	3.							
8	---3	3.							
9	---3-4	3.5							
10	---2	2.							
		3.1							

Teacher VII

1	---3-2	2.5							
2	---2-2	2.							
3	---2-2	2.							
4	---2	2.	1 1	Normal	5 28	1	70		
5	---2	2.		Training					
6	---2	2.							
6	---3	3.							
7	---2-2	2.							
8	---2	2.							
9	---	---							
10	---3	3.							
		2.3							

Teacher VIII

1	---2-3	2.5							
2	---2-2	2.							
3	---3-3	3.							
4	---3	3.	1 1	Normal	18 20	6	85	-.5	
5	---3	3.		Grad.				2.	
6	---3	3.						1.7	
7	---2-3	2.5						3.	
8	---3-3	3.							
9	---3	3.							
10	---4	4.							
		2.9							

SCHOOL H

City P

Teacher I

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2-3-1	2.							
2	---2-2-2-1	1.7				1			
3	---2-2-3-2	2.2				&			
4	---2-2-2-1	1.7	1 1	High	1 8	2	60		
5	---2-2-2-2	2.		School					
6	---2-2-2-1	1.7		Training					
7	---2-2-2-2	2.							
8	---2-2-2-1	1.7							
9	---2-2-2-2	2.							
10	---2-2-2-1	1.7							
		2.1							

SCHOOL H (Cont'd)

City P

Teacher II

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-2	2.5							
2	---2-2	2.							
3	---3-3	3.							
4	---4-4	4.	2 4	Normal	1 11	4	55	2.4	
5	---4-3	3.5		Training		&		1.2	
6	---4-4	4.				5		-.1	
7	---3-2	2.5						-.3	
8	---4-3	3.5							
9	---4	4.							
10	---4-4	4.							
		<u>3.3</u>							

Teacher III

1	---4-1	2.5							
2	---2-2	2.							
3	---3-3	3.							
4	---4	4.	2 2	High	3 6	2	60	1.	
5	---3	3.		School		&		1.3	
6	---3-3	3.		Training		3			
7	---3-2	2.5							
8	---3-2	2.5							
9	---4-3	3.5							
10	---4-4	4.							
		<u>3.</u>							

Teacher IV

1	---4-3	3.5							
2	---3-3	3.							
3	---3-3	3.							
4	---4-3	3.5	2 3	Normal	7 20	6	75	.8	
5	---4-3	3.5		Training				2.3	
6	---4-4	4.						0.0	
7	---3-4	3.5						.5	
8	---3-4	3.5							
9	---4-4	4.							
10	---4-4	4.							
		<u>3.6</u>							

SCHOOL K

City P

Teacher I

1	---2-2-3-1	2.							
2	---2-2-2-1	1.7							
3	---2-2-3-2	2.2							
4	---2-2-2-1	1.7	1 1	Normal	1 1	2	55		
5	---2-2-2-2	2.		Grad.					
6	---2-2-2-1	1.7							
7	---2-2-2-2	2.							
8	---2-2-2-1	1.7							
9	---2-2-2-2	2.							
10	---2-2-2-1	1.7							
		<u>1.9</u>							

SCHOOL K (Cont'd)

City P

Teacher II

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2-3-1	2.							
2	---3-3-3-2	2.7							
3	---2-3-3-3	2.7							
4	---2---4	3.	1	Normal	1	20	1	60	
5	-----4	4.		Grad.					
6	---2---4	3.							
7	---2-3-2-2	2.2							
8	---3-3-3	3.							
9	---2---4	3.							
10	-----4	4.							
		3.							

Teacher III

1	---2-2-3-2	2.2							
2	---3-2-2-2	2.2							
3	---2-2-3-3	2.5							
4	---2-2-4-3	2.7	2 3	Normal	3	12	4	70	
5	-----4-3	3.5		Training					
6	---3---4-2	3.							
7	---2-2-2-2	2.							
8	-----3-3	3.							
9	---2---3-3	2.7							
10	---2---3-3	2.7							
		2.7							

Teacher IV

1	---2-2-2-2	2.							
2	---2-2-3-2	2.2							
3	---2-2-3-3	2.5							
4	---2-2-2-2	2.	2 3	Normal	1	1	3	55	2.8
5	---2-2-2-2	2.		Grad.					1.9
6	---2---2-2	2.							2.5
7	---2-2-3-2	2.2							0.0
8	---2---1-2	1.7							
9	---2---3-3	2.7							
10	-----3-2	2.5							
		2.2							

SCHOOL L

City P

Teacher I

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2	2.							
2	---2-3	2.5							
3	---2-3	2.5							
4	---3	3.	1 3	High	2	9	5	60	2.1
5	---2-3	2.5		School					.3
6	---3-3	3.		Training					.7
7	---2-3	3.							-.9
8	---3	3.							
9	---2	2							
10	---	---							
		2.6							

SCHOOL L (Cont'd)

City P

Teacher II

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-3	3.							
2	---2-3	2.5							
3	---2-3	2.5							
4	---4	4.	2 2	College Training	6 17	4	65		
5	---2-4	3.							
6	---2-4	3.							
7	---2-3	2.5							
8	---2-4	3.							
9	---3-4	3.5							
10	---4	4.							
		<u>3.1</u>							

Teacher III

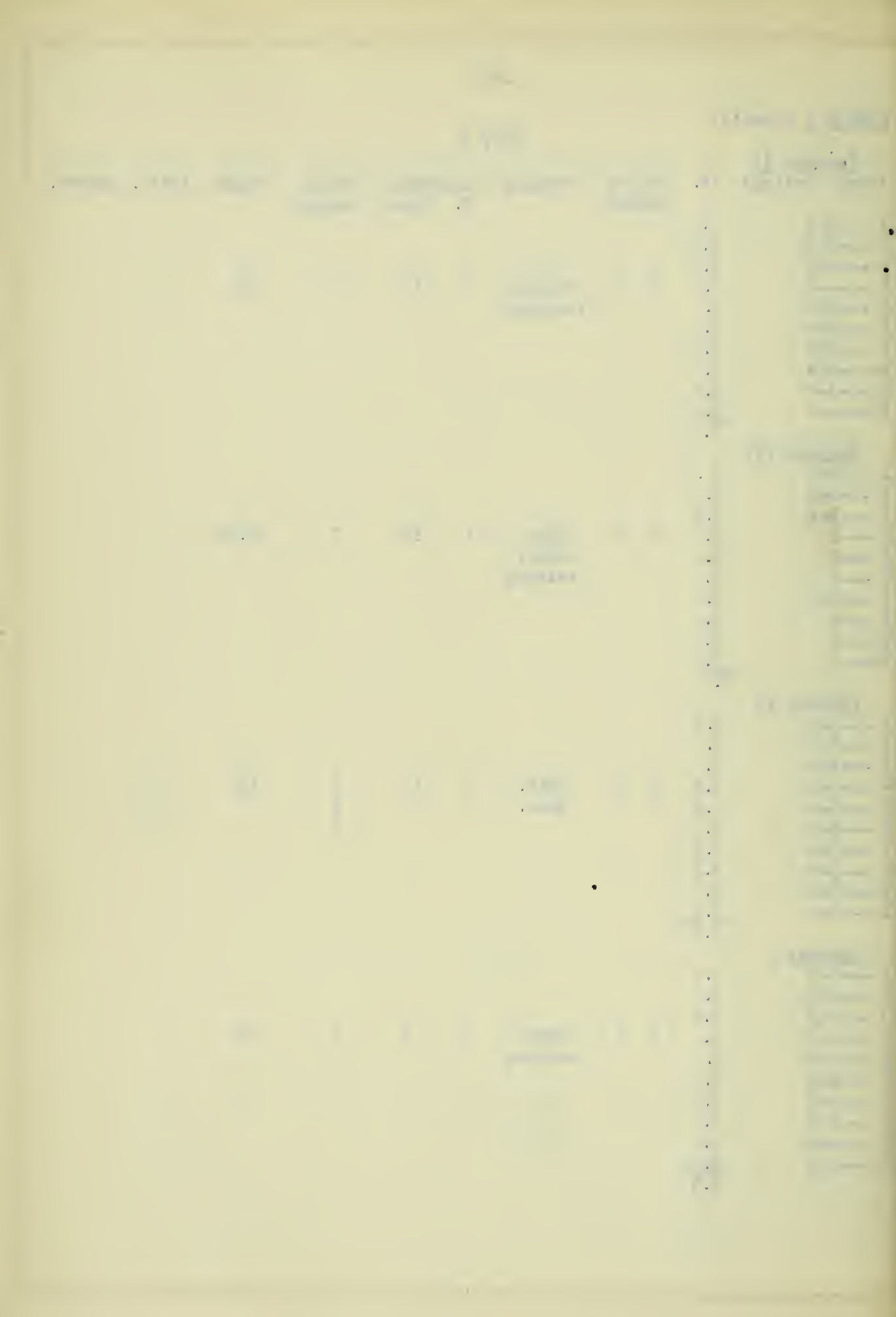
1	---4-2	3.							
2	---2-2	2.							
3	---3-2	2.5							
4	---2	2.	2 2	High School Training	11 16	7	82.50		
5	---2	2.							
6	---2	2.							
7	---2-2	2.							
8	---2	2.							
9	---3	3.							
10	---3	3.							
		<u>2.4</u>							

Teacher IV

1	---3-4	3.5							
2	---3-3	3.							
3	---2-4	3.							
4	---3-4	3.5	2 2	Univ. Grad.	7 12	2 & 3	65		
5	---5-4	4.5							
6	---5-4	4.5							
7	---3-4	3.5							
8	---3-4	3.5							
9	---4-4	4.							
10	---3-4	3.5							
		<u>3.6</u>							

Teacher V

1	---2-3	2.5							
2	---2-2	2.							
3	---2-3	2.5							
4	---2-2	2.	2 3	Normal Training	2 4	1	75		
5	---2	2.							
6	---2-2	2.							
7	---2-3	2.5							
8	---2-2	2.							
9	---4	4.							
10	---2-3	2.5							
		<u>2.4</u>							



SCHOOL L (Cont'd)

City P

Teacher VI

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---2-2	2.							
2	---2-2	2.							
3	---2-3	2.5							
4	---2-3	2.5	1 1	Univ.	10	12	1	75	
5	---3	3.		Grad.			&		
6	---1-3	2.				2			
7	---1-3	2.							
8	---1-3	2.							
9	---3	3.							
10	---2-4	3.							
		<u>2.4</u>							

Teacher VII

1	---3-3	3.							
2	---2-3	3.							
3	---2-3	2.5							
4	---3	3.	2 2	High	2	6	6	60	-.3
5	---5	5.		School					
6	---5	5.		Training					
7	---3-3	3.							
8	-----								
9	-----								
10	-----								
		<u>3.6</u>							

Teacher VIII

1	---3-3	3.							
2	---2-4	3.							
3	---2-3	2.5							
4	---3-4	3.5	2 2	Univ.	1	3	3	55	2.3
5	---4	4.		Training					
6	---3-4	3.5							
7	---2-4	3.							
8	---3-4	3.5							
9	---2	2.							
10	---2-4	3.							
		<u>3.1</u>							

SCHOOL M

City P

Teacher I

Items	Ratings								
1	---2-1-1	1.3							
2	---2-1-1	1.3							
3	---2-1-2	1.7							
4	---2-1-2	1.7	3 3	Univ.	1	3	2	55	
5	---2---2	2.		Grad.					
6	---2---2	2.							
7	---3-1-2	2.							
8	---2-1	1.5							
9	---2---2	2.							
10	---2-1	1.5							
		<u>1.7</u>							

SCHOOL M (Cont'd)

City P

Teacher II

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-2	2.5							
2	---2-2	2.							
3	---2-3	2.5							
4	---4-3	3.5	1 1	Normal Training	1 5	4			
5	---3-3	3.							
6	---3-3	3.							
7	---2-2	2.							
8	---3-3	3.							
9	---3-4	3.5							
10	---4-4	4.							
		<u>2.9</u>							

Teacher III

1	---3-2-3	2.7							
2	---3-1-4	2.7							
3	---3-3-3	3.							
4	---4-1-4	3.	1 1	Univ. Grad.	20	3	60	3.6	
5	---4-3-4	3.7						5.	
6	---4-4-4	4.							
7	---3-4-4	3.5							
8	---3-3-3	3.							
9	---4-3	3.5							
10	---3-4-4	3.5							
		<u>3.3</u>							

Teacher IV

1	---2-2	2.							
2	---2-3	2.5							
3	---2-3	2.5							
4	---4-3	3.5	2 2	High School Training	5 9	6	55	1.5	
5	---3-3	3.						1.7	
6	---3-3	3.						2.	
7	---2-3	2.5						2.7	
8	---3	2.							
9	---4-4	4.							
10	---4-4	4.							
		<u>3</u>							

Teacher V

1	---3-2-2	2.3							
2	---3-2-2	2.3							
3	---3-3-3	3.							
4	---2-5-3	3.3	1 1	College Grad.	1 8	5	65		
5	---2-3-3	2.7				&			
6	---2-3-3	2.7				6			
7	---3-3-3	3.							
8	---2-4-3	3.							
9	---3-3-3	3.							
10	---3-4-4	3.7							
		<u>2.9</u>							

SCHOOL M (Cont'd)

City P

<u>Teacher VI</u>									
Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-1-3	2.3							
2	---3-1-3	2.3							
3	---3-3-3	3.							
4	---4-1-4	3.	1 1	Univ. Training	13 15	1	75		
5	---3-4	3.5							
6	---4-3-4	3.7							
7	---4-1-4	3.							
8	---3-4	3.5							
9	---5-4-4	4.3							
10	---4-4-4	4.							
		<u>3.3</u>							

<u>Teacher VII</u>									
1	---3-2-3	2.7							
2	---3-2-2	2.3							
3	---3-3-4	3.3							
4	---3-2-3	2.7	1 3	Normal Training	1 8	5	65		
5	---2-3-3	2.7							
6	---2-3	2.5							
7	---2-3-3	2.7							
8	---2-3-4	3.							
9	---3	3.							
10	---2---5	3.5							
		<u>2.8</u>							

<u>Teacher VIII</u>									
1	---4-3	3.5							
2	---3-2	2.5							
3	---4-2	3.							
4	---4-3	3.5	1 1	College Training	7 12	7	80	2.3	
5	---3-4	3.5						3.4	
6	---4	4.						3.4	
7	---3-2	2.5						2.9	
8	---3-3	3.							
9	---3-3	3.							
10	---4-3	3.5							
		<u>3.2</u>							

SCHOOL W

City P

<u>Teacher I</u>									
Items	Ratings								
1	---2-3-2-2-1	2.							
2	---3-3-3-3-2	2.8							
3	---2-3-2-3-3	2.6							
4	---2-4-3-3-4	3.2	2 2	College Training	4 6	3	60	0.0	
5	---2-4-4-3-4	3.4						0.5	
6	---4-2-3-3	3.							
7	---2-4-2-3-3	2.8							
8	---3-4-3-2-3	3.							
9	---4---1-3	2.7							
10	---3-5---3-3	3.5							
		<u>2.9</u>							

SCHOOL W (Cont'd)

City P

Teacher II

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith,	Handwr.
1	---2-2-2-2-2	2.							
2	---2-3-2-2-1	2							
3	---2-2-2-3-2	2.2							
4	---2-3-2-2-2	2.2	2 2	Univ- Grad.	7 7	1	70		
5	---2-4---4-3	3.2							
6	---2-3---4-2	2.7							
7	---2-3-2-2-2	2.2							
8	---2-2-3-1-2	2.							
9	---2-4-----2	2.7							
10	---3---2-2	<u>2.3</u>							
		2.4							

Teacher III

1	---2-3-1-3-3	2.4							
2	---2-2-2-5-2	2.6							
3	---2-3-3-3-3	2.8							
4	-----2-4-3	3.	1 1	College Grad.	5 20	5	85	0.3	
5	-----4-5-3	4.						-.1	
6	---2-3-4-5-2	3.2						2. 1	
7	---2-3-3-4-3	3.						1.6	
8	---2---4-5-3	3.5							
9	-----5-3	4.							
10	-----4-3	<u>3.5</u>							
		3.2							

Teacher IV

1	---2-3-3-3-2	2.6							
2	---2-3-2-2-2	2.2							
3	---2-3-2-3-3	2.6							
4	-----3-3-4-4	3.5	3 3	Normal Training & College Grad.	1 2	6	55	.8	
5	-----4-4-4-4	4.						1.6	
6	---3-4-4-4-4	3.8						1.1	
7	---2-3-2-3-2	2.4						.5	
8	-----4-2---4	3.3							
9	---2-4---4-4	3.5							
10	-----4-4---4	<u>4.</u>							
		3.2							

Teacher V

1	---2-3-2-2-3	2.4							
2	---2-2-3-3-3	2.6							
3	---2-2-2-3-4	2.6							
4	---3-3---3-4	3.2	2 2	High School Training	4 12	4	60	3.2	
5	-----4-4-2-4	3.5						1.8	
6	---2-4-4-3-4	3.4						0.9	
7	---2-2---3-3	2.5						1.7	
8	---4---4-4	4.							
9	---2-4---4-4	3.5							
10	---4---4	<u>4</u>							
		3.2							

SCHOOL W (Cont'd)

City P

Teacher VI

Items	Ratings	Av.	Supt's Rating	Training	Experience P. total	Grade Taught	Salary	Arith.	Handwr.
1	---3-2-2-3-3	2.6							
2	---3-3-2-5-3	3.2							
3	---2-2-2-3-4	2.6							
4	---2-3-2-3-4	3.2	2 3	Univ.	14 14	7	82.50	3.1	
5	---2-2-3-4	3.		Grad.				2.2	
6	---2-2-2-4-4	2.8						1.6	
7	---2-3-1-4-4	2.8						2.3	
8	---2-3-2-4-4	3.							
9	---3-4-4	3.5							
10	---2-2-4-4	3.							
		3.							

Teacher VII

1	---2-3-3-4-2	2.8							
2	---4-2-3-3-2	2.8							
3	---2-2-2-3-3	2.4							
4	---3-3-3-4-2	3.	1 1	Univ.	13 16	2	70		
5	---3-3-4-2	3.		Grad.					
6	---4-4-5-2	3.7							
7	---3-4-2	3.							
8	---2-4-2	2.7							
9	---3-4-3-3	3.2							
10	---3-2	2.5							
		2.9							

CHAPTER VI.

CORRELATIONS AND INTERPRETATIONS

Correlations between the progress of pupils, as measured by the Courtis Tests in Arithmetic and by the Thorndike Handwriting Scale on the one hand, and the average ratings of the corresponding teachers on the rating form on the other hand, have been worked out¹. In determining the correlation between gain in the four fundamental processes of arithmetic and the rating of the teachers on the form, two methods were used. In the first instance the correlation was determined on the basis of the medians of ratings on the form and improvement of the pupils in the tests¹. Here the correlation is $-.63$ (P.E. 0.18).

By use of the Courtis standards for achievement in these tests, for each of the grades III-VIII, the improvement which should be made in each grade from one year to the next was calculated. One fourth of this year's improvement was taken as the gain which might be reasonably expected during the seven weeks between the two tests. With this average used as a median the correlation with the ratings of the teachers on the form was secured by the method used in the earlier correlation. By this method it was found to be 0.57 (P.E. 0.18).

¹The writer felt that there would be some variability between the accomplishment of a group of pupils at different times, due to accidental conditions. He was unable to get an authoritative statement on this point either from critical literature on the subject or from personal communication with the author of the tests, Mr. S. A. Courtis. He has chosen somewhat arbitrarily to disregard all gains and losses of less than 0.3. This means that all differences of as much as one "right" in one of the fundamentals, or for all four processes combined, are used in calculating the correlations.

The form-ratings of the teachers in City B show a correlation of 0.34 (P.E. 0.2) with the ratings of these teachers in General Teaching Ability, by the superintendent; while the form-ratings of the teachers in City P, show no significant relation with the superintendent's ratings. The superintendent of City B had used the form in rating the recitations in three of his schools¹, before making the rating in General Teaching Efficiency, while the superintendent of City P had not used the form at all. The superintendent of City B required several hours to make the rating of his 30 teachers in General Teaching Ability; while the superintendent of City P rated his 56 teachers in less than one hour.

The following distribution shows the ratings of the teachers of the two cities on the form and the ratings of the same teachers by the superintendents in General Teaching Ability:

Scale ratings	Superintendents' Ratings				Total
	1	2	3	4	
1-1.4					
1.5-1.9	2	1			3
2 -2.4	11	6	2		19
2.5-2.9	10	11	8		29
3 -3.4	7	10	7	1	25
3.5-3.9	2	2	2		6
	32	30	19	1	82

¹These ratings were to have been included in the study, but they were mailed to the writer by the superintendent during the summer months and were lost in the mails.

Median on form corresponding to superintendents'	rating of 1--2.65
" " " " " "	" " 2--2.85
" " " " " "	" " 3--2.97
" " " " " "	" " 4--3.20

Median of fourth group not very significant (based on one rating).

The correlation between the form ratings and the superintendents' ratings based on the distribution just shown is 0.32 (P.E. 0.12)¹. While this correlation is not very high, it is decidedly positive and tends to support the form ratings, when considered in connection with the high negative correlation between the form-ratings and the Courtis tests results.

The correlation between improvement in handwriting with the form ratings was next determined. The correlation here is 0.60 (P.E. 0.28). This, it will be noted, is almost as strongly positive as the others are negative, but the comparatively small number of rooms (14) tested, cause this correlation to carry less weight than the two previous correlations. The very striking contrast here suggested a comparison of the results in the two types of tests in those rooms where both were given. The correlation here was -0.71 (P.E. 0.36), but here again the number of rooms (10) in which results in the two types of tests could be compared was too small to be at all conclusive.

¹ This distribution is made from the first ratings of the superintendents (the ratings which appear second in the tables) in which the superintendents rated the teachers into five ranks or degrees of General Teaching Ability, "1", "2", "3", "4" and "5". The preceding correlation between the form-ratings and the ratings of the superintendent of City B is based on the second ratings of the superintendent (the ratings which appear first in the tables) in which the superintendents were asked to rate their teachers into ten ranks or degrees of General Teaching Ability.

These figures show, of course, insofar as they can be considered representative, that, in general, where improvement is marked in handwriting it is small or absent in the four arithmetical processes, and vice versa . The two alternatives in explaining these results are apparently; First, that the teachers who were securing great improvement in either handwriting or arithmetic were stressing that subject to the neglect of the other; and second, that ability in teaching the fundamental arithmetical processes is negatively correlated with ability in teaching handwriting. In the writer's opinion, the former explanation is much the more reasonable of the two. Certain conditions in these schools, in regard to the arithmetic teaching, during the interval between the two tests will be brought out in the following paragraph, and will throw some light on this point.

The high negative correlation between the improvement shown by the Courtis Tests, and the rating of the teacher by the judges might be construed to mean that the items on which the teachers were rated are not important elements in teaching. The writer does not believe that this follows from the data. He believes, on the other hand, that the Courtis Tests, in the case of these particular schools at least, were not only not good tests on which to base an estimate of teaching efficiency, but that they might be reasonably expected to show results quite misrepresentative of the actual work in the rooms. A short time before the first tests were given the teachers had begun the use of certain uniform cards in their arithmetic work. On these cards

were printed series of figures consisting of examples in addition, subtraction, multiplication and division. By means of a formula, the pupil could tell immediately whether or not the work was accurately done. If the example was correctly worked a certain combination of the figures in the answer would always give the figure found in a certain position of the original series, e.g., the sum of the last two digits of the answer, minus the middle digit, will be equal to the first digit of the original series.

These cards were used by some teachers to the practical exclusion of any problem or original work. The arithmetical work in the case of these teachers became more than ever a drill in the manipulation of numbers. While this kind of work would naturally increase the specific ability which the Courtis Tests measure, it does not by any means follow that the teacher who is able to increase the skill of her pupils in the manipulation of numbers, should be ranked proportionately high in teaching ability, if teaching ability is, as the writer believes, rightly conceived and embodied in the present rating-form. It seems to the writer altogether likely that certain teachers who possessed no great amount of originality or initiative accepted this mechanical device and put more than the customary stress on this particular work during the period over which the cards were used, which happened to cover the interval between the writer's two tests. If this was the case, it is not strange that the poor teachers should make a good record in the Courtis Tests.

The writer realizes that there are at least two other possible explanations of the negative correlation between his

form ratings and the Courtis test results. In the first place it may be said that the factors which the writer has chosen to rate are not the important factors in teaching ability. This point has been discussed earlier and will not be treated in further detail here.

Again, it may be thought that the items of the form were not interpreted in the same way by all of the persons rating. In order to see, if possible, to what extent this is true the correlation between the ratings of the writer and those of the other judges was worked out¹. This correlation is .46 (P.E. -0.048). While this correlation may seem at first somewhat low, for ratings on the same teachers, it is seen to be reasonably high, when all of the factors entering into the ratings are considered.

In the first place, the judges rated different recitations. There is, of course, a chance for a considerable amount of variation from day to day; due to the physical condition of the teacher and the pupils, the time of day at which the visit is made, etc. Another factor which tends to produce some variability is the subject of the recitation. Some teachers show much more teaching ability in certain subjects than in others.

Considering the above factors which tend to produce variability in ratings by any scale or form, the correlation of 0.46 is reasonably high.

The Courtis Tests, like many other tests that have been devised for use in elementary school work, measure a very specific

¹Correlation determined by the Spearman "footrule for correlation".

and a very necessary ability of the child, but it can hardly be claimed that they furnish anything like an adequate basis on which to judge teaching ability. The following quotation sounds a note of warning against rash interpretations of the results of such tests, and expresses well the attitude of the present writer:

"While the ideal of scientific or exact measurement is greatly to be commended, there is grave danger that the weighting and measuring apparatus may not be as scientifically correct as they should be, and that they may be used in ways for which they were not intended.----- . Certain results of instruction can be measured, as, for example, the degree of legibility of handwriting, when matched with the corresponding sample on the Ayres scale; or accuracy and speed in adding or subtracting numbers when tried by the Courtis test. These standards help us to know a great deal more exactly than we can know without their aid the value of the results which we are getting in terms of the standard. But there are very important features of the learning process which they do not measure and do not attempt to measure. One of these is the interest which students take in the process which they are acquiring; another is the value which they are learning to attach to it; a third is the obstacles which they are overcoming; and a fourth, the degree of momentum with which they are likely to carry these processes on after leaving school"¹.

As this author points out, the present scales and tests enable one to determine what results are being accomplished "in

¹Ernest Carroll Moore: What is Education, Pp. 299-300. See also, W. F. Dearborn: The Misuse of Standard Tests in Education. School and (Cont.)

terms of the Standard". These results are important and it is well to secure them, but he recognizes that there are other phases of teaching for which we have, as yet, no scales or purely objective tests.

In order to secure a further check upon the ratings on the form, the ratings of the superintendents upon the teachers in those rooms where the Courtis Tests were given, were compared with the improvement of the pupils in those rooms. The correlation shown here is -0.29 (P.E. 0.18). While this correlation is not so high as that between the test results and the ratings on the form, it is still decidedly negative. The teaching ability of those teachers, then, who advanced their pupils most, as measured by successive tests in arithmetic is, as a rule, rated low by the superintendents as well as by persons using the rating form.

In order to ascertain to what extent, if at all, the progress of the pupils in one particular type of mental work is related to the ability of the teacher in the same work, the writer applied the Courtis tests to 56 teachers, including those whose pupils had been tested in the same way. The correlation shown here between the accomplishment of the teachers in the tests and the improvement of the corresponding pupils over a period of seven weeks was 0.62 (P.E. 0.21). This correlation indicates a relation of an intimate sort between the teacher's own ability in the four fundamentals and her success in advancing her pupils in the same processes. To the writer, who places a good deal of

(Cont.)

Society. April 1, 1916.

confidence in his form-ratings, the relation just shown seems to lend support to his tentative conclusion that advancing pupils in such specific work as that of the Courtis tests does not necessarily indicate anything with regard to General Teaching Ability.

The writer does not believe that these results should be interpreted as meaning that ability to advance pupils in the material of the Courtis tests is negatively correlated with general teaching ability. It was not necessarily the ability of the teacher to teach the material, that was measured by the tests. It was simply the actual accomplishment, regardless of the time or stress that may have been put upon that particular phase of the school work. The only safe inference to be drawn from these data in this connection is simply that results from the Courtis tests alone can not be understood to indicate corresponding General Teaching Ability on the part of the teacher or the pupils to whom the tests are applied.

The correlation between scale rating and total teaching experience was found to be $-.46$ (P.E. 0.12). This negative correlation seemed at first quite inexplicable, inasmuch as good teaching has been generally supposed to be positively correlated with experience. In endeavoring to explain this apparent anomaly the writer compared the experience of the groups representing different kinds and amounts of training. The experience of each group is indicated below. In each case the first number represents the median and the second number represents the average number of years' experience.

	Number in group	Experience Av.	Med.
High School Training only-----	11	10	9
High School Graduation only-----	2	16	
Normal training but not graduation-----	25	12	10
University or college training but not graduation-----	14	16	15
University or college graduation-----	19	10	10
Normal graduation-----	15	6	4

It will be noted here that, in general, the teachers who have had most experience are the teachers whose training has been limited. There seems to be evident here the growing tendency for teachers to prepare themselves more thoroughly before beginning to teach. In view of this tendency it is only natural that one should find the better teachers among those of comparatively little experience.

Ruediger and Strayer concluded that teachers improve for about ten years of service and lose after about the twenty-fifth year¹. In connection with this point the following distribution is interesting. The teachers were divided into five groups on the basis of number of years of experience. The total number of teachers and the per cent at, above, and below the median of the ratings are given for each of the five groups.

¹Ruediger and Strayer: Qualities of Merit in Teachers. Jr. of Ed. Psych. May, 1910. Vol. 1.

Years of Experience	Number of Teachers	Form ratings		
		At median	Above median	Below median
1-5 inc.	19	0	58	42
6-10 inc.	27	11	59	30
11-15 inc.	16	6	12	82
16-20 inc.	17	6	29	65
20-28 inc.	6	50	50	0

This distribution bears out the first part of the conclusion if it is permissible to draw conclusions from the data in the way that Ruediger and Strayer did. For the rank of the teachers in the 6-10 year group is better than that of the 1-5 year group, apparently showing that the teachers are continuing to improve. The writer believes, however, that the training of the teachers of varying amount of experience must be taken into consideration in this connection. Considering form-rating and experience alone the above distribution would indicate that teaching ability declines very decidedly after about ten years of experience and rises again after about twenty years of experience. Comparatively few teachers in these two school systems have had more than twenty years of experience, but in their cases there seems to have been a survival of the fittest.

Ruediger and Strayer in their study, referred to above, found that of the teachers rated on their list of items 69% of the best teachers were in grades 1, 2, 7 and 8. More special training or at least more highly specialized ability is required of the teacher in the first and second grades, especially the first, and the teachers in these grades are generally supposed to

be better teachers than those in the intermediate grades. According to the ratings on the form in the present investigation, this is true for these teachers, inasmuch as 63 $\frac{1}{2}$ % of the teachers in these two grades are rated above the median.

CHAPTER VII.

USE OF THE RATING FORM BY SUPERINTENDENTS AND TEACHERS.

A. Extended Application of the Rating Form in the School Systems of Illinois.-- In order to ascertain whether the form could be used satisfactorily by school superintendents, and in order to secure additional data on the basis of which to determine certain correlations suggested by the ratings of the original eighty-six teachers, the writer requested the superintendents in one hundred school systems of Illinois to rate all of their elementary teachers upon the form.

Superintendents of small cities or towns were selected to do this rating, as it was highly desirable that the ratings should be made upon actual recitations, and it was not thought that the superintendents of the larger cities would, or could, do this sort of rating and send in their results within the time-limits of the present investigation.

Certain modifications were made in the wording of some of the items. The form as shown herewith, represents very nearly what the judges were rating in the case of the 86 teachers to whom the form was first applied. It was thought necessary to make some of the items more explicit, however, when sending the forms to the superintendents. Particularly was this thought to be necessary in the case of Governmental Skill, which was intended to include the class "atmosphere" of respect for, and interest in, their work.

The form, as sent to the superintendents, is shown on the following page.

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A. E

B. G

C. S
1. S

2. G

3. U

4. T

5. T

6. P

7. S

8. S

9. S

10. C

D. C

E. T

F. N

G. T

The q

Persor

List of Items for Testing Teaching Efficiency in the Elementary School

Score each of your elementary teachers in each of the items listed below. Items A and B are to be scored first for each teacher, on the basis of the knowledge that you already have of the teacher and her work.

You will please distinguish carefully between item A, the total efficiency of the teacher in all of her relations and activities; and Item B, the actual teaching ability of the teacher or her ability to conduct the work of the classroom. The ratings on items 1 to 10 inclusive, should be made, if possible, during the observation of a complete recitation. Item D is identical with B above, but should be scored after all the ratings above it have been made. E, F and G may be filled in at any time.

The ratings are to be made on a scale of 1 to 10. "1" will be understood as exceptionally good, "10" as very poor, and the other numbers as intermediate degrees. Please write the figures representing your ratings plainly in the rectangles opposite each item for each teacher.

	Teacher	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A. Estimate of the <i>total</i> efficiency of the teacher (social, moral, educational, etc.) in her relations to the school, the community, etc.																											
B. General estimate of the teacher's actual <i>teaching ability</i> .																											
C. Specific items rated on basis of class (recitation):																											
1. Speech. (Modulation and quality of voice and rate and enunciation of speech.																											
2. Governing skill. (Are the pupils serious or flippant, natural or constrained?)																											
3. Use of English (By teacher and pupils.)																											
4. Teacher's skill in the organization of the material of the recitation.																											
5. Teacher's ability to fix the recitation in its proper setting in the course (connecting work with preceding and following recitations.)																											
6. Proper stressing of relative values (distinguishing fundamental from accessory.)																											
7. Skill in directing habit-formation.																											
8. Skill in questioning (Are the questions clear, relevant, too many, too difficult, too plainly suggestive of the answer?)																											
9. Skill and care in assignment (Making clear to the pupils the amount of material to be covered and preparing them for it.)																											
10. Choice and use of illustrative material.																											
D. General estimate of the teacher's actual teaching efficiency. Made after specific rating.																											
E. Teacher's total number of years experience.																											
F. Number of years in the present town.																											
G. Training: No. of years in high school, normal school or college																											

The questions in parenthesis are merely suggestive and are not to be answered.

Person rating..... City..... Date.....

The forms were sent out near the middle of February and by the twenty-second of March, when the data were worked up, thirty-two superintendents had sent in their ratings upon four hundred fifty-eight teachers.

These superintendents apparently found little difficulty in interpreting the items of the form. In the cases of only four teachers were they incompletely filled out. This evidence of the superintendents contributes strong support to the judgment of the writer that the items of this form can be easily understood and that they enter into practically all recitations. Superintendents would hardly have used the form to any such extent as they did, had it not been satisfactory.

1. Correlations and Conclusions Based on the Superintendents' Ratings. In the studies of Boyce and Ruediger and Strayer the superintendents were asked to make a general estimate of the efficiency of the teacher, after making a detailed ranking or rating 1. The writer wished to know just what, in the opinion of the superintendents, are the important components of general efficiency. With this in view, he included with the ten-division rating form the two more general divisions; A "Total Efficiency", and B "Actual Teaching Efficiency", and later determined the correlation between the two. This correlation, based on the ratings of four hundred fifty-eight teachers is .94 (P. E. 0.05).

This very high correlation shows that the class room work is the determining factor in the superintendents' estimates of their teachers. According to these figures, the superintendents

do not consider the social adaptability and outside interests of the teacher except insofar as these are found in connection with ability in the work of the classroom. Extra-school interests of the right sort, and general social adaptability are probably generally found in the person who ranks high in Teaching Ability, and vice versa. This seems to be a better explanation of the high correlation than the explanation that all of the qualifications of a teacher except Teaching Ability are considered unimportant by the superintendent.

In order to ascertain just what, in the opinion of the superintendents, is the relative importance of each of the ten items of the form in determining teaching ability, correlations between Teaching Ability and each of the ten items of the form have been determined. These correlations are shown in the following table:

Correlations Based on Classroom Ratings
of 458 Teachers by 32 Superintendents

Correlation between rating in General Teaching Ability
by superintendents and:

		Rank
Speech-----	.78	8
Governing Skill-----	.90	4
Use of English-----	.79	7
Teacher's Skill in the Organization of the Material of the Recitation-----	.91	3
Teacher's Ability to Fix the Recitation in its Proper Setting in Course-----	.91	3
Proper Stressing of Relative Values-----	.89	5
Skill in Directing Habit-Formation-----	.92	2
Skill in Questioning-----	.97	1
Skill and Care in Assignment-----	.89	5
Choice and Use of Illustrative Material-----	.86	6

It will be noted here that there is a strong positive correlation between Teaching Ability and each one of the ten items of the form, but that some of the items are more closely correlated with Teaching Ability than others.

Speech ranks lowest of all the items and Skill in Questioning ranks highest. Just as in earlier studies, Superintendents in this investigation also apparently consider purely physical qualities, such as voice, as of least importance in teaching ability.

Governing Skill does not show so high a correlation, relatively, as it did in the study of Ruediger and Strayer. While it ranks fifth, however, it is really very little below any other item except Item "8".

It is not surprising that Skill in Questioning should play an important part in determining the superintendent's judgment of teaching ability. The very large part that the question-and-answer method play in the recitation in the elementary school makes the ability to originate and frame questions a very necessary qualification for good teaching. The lack of this ability is almost sure to be evident in any recitation. Certain very important and almost always observable factors, such as the one just mentioned, are likely to become fixed in one's mind as factors denoting good teaching. On the other hand, such items as "Choice and Use of Illustrative Material" are so variable that they are not likely to be recognized as so important, and considering a large number of recitations, they probably are not. The need for illustrative material, of course, differs greatly in different

types of recitations and in different subjects, while the "Direction of Habit Formation" and "Questioning" are much more constant and consistent factors¹.

The correlation of +0.33 between the superintendents' ratings in General Teaching Ability, and the experience of the teachers is significant. It will be remembered in this connection that the correlation between experience and the average rating on the form was -.46. In the case of these 86 teachers rated on the form, however, the training of the groups with various amounts of experience seems to offer a reasonable explanation.

The median experience of these teachers is just eight years.

The positive correlation between the superintendent's rating and the teacher's experience shows that experience is in some way related to the factors which determine the superintendent's estimate of the teaching ability of his teachers. It was thought that superintendents might be disposed to rank a teacher somewhat higher because of that teacher's experience in the superintendent's own system. The correlation between the teachers' Experience in the Present System and General Teaching Ability, however, is 0.29 (P.E. 0.05), or slightly less than the correlation between General Teaching Efficiency and Total Teaching Experience 0.33 (P.E. 0.05).

The teachers' experience is more closely correlated with

¹Another explanation of this low correlation, which has sometimes been advanced, is that a high rank in physical qualities is a prerequisite for all teaching positions.

the superintendents' ratings in the particular item Governmental Skill than with their ratings in General Teaching Ability. The correlation with this particular item is .39 (P.E. 0.05). On the other hand, there is practically no correlation (-.01) between the teacher's training and his rating in this item. These two correlations point to the conclusion that the institutions which train teachers have not yet found a good substitute for the ordinary school, to develop in their prospective teachers the ability to manage children and secure their cooperation in the classroom work.

Opposite each item of the form in the following table is placed the median of the ratings of all teachers in that item.

Speech-----	2.50
Governing Skill-----	2.59
Skill and Care in Assignment-----	2.59
Choice and Use of Illustrative Material-----	2.65
Use of English-----	2.67
Teacher's Skill in the Organization of the Material of the Recitation-----	2.68
Teacher's Ability to Fix the Recitation in its Proper Setting in the Course-----	2.69
Skill in Questioning-----	2.74
Proper Stressing of Relative Values-----	2.80
Skill in Directing Habit-Formation-----	2.97

The teachers, on the whole, are rated highest in Speech and lowest in Skill in Directing Habit-Formation. There is not, however, any large difference between these median ratings in any two items. There is no one of these abilities in which we can say, on the basis of these ratings, that teachers rank relatively very high or very low. It would probably be safe to conclude that teachers, as a rule, have developed their voice and speech to a somewhat higher point of efficiency than their Skill in ^{Directing} Habit-Formation.

The uniformly high rating of the teachers in all of the items of the form is no doubt due, in some measure, to the method of rating. The method used throughout the study was to secure ratings rather than rankings in estimating the efficiency or ability of the teachers. There are advantages, as well as disadvantages, in each method.

The rank order (the method which Boyce used in his earlier study but which he discarded in favor of the rating method in his later study) has the advantage of securing a finer distribution wherever it can be used. However, in compelling this fine distribution, where many teachers are involved, it often produces forced and even false distinctions. Again, a distribution secured by the rank-order method gives one no idea of the relative degrees of merit represented by the various ranks. The implication is, ofcourse, that the difference between any teacher's position and the position of the teacher just below is exactly equal to the difference between the same teacher's position and the position of the teacher just above.

The advantage of the method of rating by definite steps is that the person rating can express the difference between the ratings of two teachers in terms of a unit. This method thus allows much more freedom in fixing the relative positions of the various teachers. The disadvantage of rating, as compared with ranking, is that in allowing a grouping, instead of forcing a distinction between each pair of teachers, it may cause superintendents to make a less careful study of each individual teacher

and a less discriminating distribution.

The writer experimented with both methods. The superintendent in one of the two cities in the first investigation was asked to rank his thirty teachers. He succeeded in grouping these teachers into five degrees of teaching ability, "1", "2", "3", "4" and "5", but he explained in doing so, that the distinction between groups "1" and "2" and between "4" and "5" was very slight, and difficult to make. This evidence, together with some experience of his own as a high school principal, in estimating the efficiency of teaching, influenced the writer in reaching the conclusion that a method of rating, covering five degrees of merit, would provide for the exercise of as much discrimination as the superintendents and the persons using the form would exercise.

The five-group rating method was used in the ratings on the form by the writer and those assisting him. When the form was later sent to the superintendents throughout the state of Illinois, for use in their school systems, provision was made for distinguishing among ten degrees of merit, i.e., "1" to "10", inclusive. (See form, page 100.) The larger number of divisions of merit in the latter instance did not materially affect the form of the distribution, except to cause the ratings to be, in general, somewhat higher. Both the 1-5 and the 1-10 group methods of ratings were used by the superintendents of the two cities first investigated, as shown in the table.

The writer does not propose a teacher-rating scale. While the correlations between the various items and General

Teaching Ability have been worked out, he does not feel justified in drawing from them any conclusions as to the importance of each of the items. The items presented in this study are items which have been tested in use as no other items or qualities of teaching ability of which the writer has any knowledge. He has used them in visiting recitations totalling three weeks school time, and the persons assisting him have used them for a shorter time. A number of teachers in one city used them in cooperation with their superintendent. Thirty-two school superintendents in various sections of the state of Illinois have used them in connection with the work of four hundred fifty-eight teachers.

There are two characteristics of the present study which should again be emphasized. In the first place the study was concerned exclusively with the recitation, rather than with the teacher's "total efficiency". In the second place, the investigation has been cooperative in so far as the writer could make it so. After the teachers had been rated¹ copies of the form were distributed among teachers, as well as superintendents, and all were invited to criticize and comment upon it freely. The writer is confident that the cooperative method is the method by which most good can be accomplished.

¹The teachers were not consulted before the rating because the writer did not then have time to explain the form to all of them fully; and he judged it best, in order to secure comparable data, to attempt no explanation at that time.

SUMMARY AND CONCLUSIONS

I. Schemes in Use and Schemes Projected for Estimating the Efficiency of Teachers

A. Examinations and superintendents' general estimates now constitute the principal bases for estimating teaching ability in the elementary schools of the smaller cities.

B. Some kind of printed forms are in use in the majority of the large cities.

C. The scales in use in rating teachers in the cities attempt, as a rule, to measure the "total efficiency" of the teacher, rather than merely his "teaching ability".

D. Similarly, scales projected for general use have, like the scales of the large cities, represented attempts to measure the "total efficiency" of the teacher. As a result, they have either employed a few terms so general and inclusive as to be open to many interpretations, or they have included so many items as to be cumbersome in use.

E. The present tendency in constructing scales for teachers in the cities is toward finer differentiation and greater elaboration.

II.

The development of scales and tests in the elementary school subjects is analogous to the development of scales for rating teachers. The former, like the latter, have developed and are developing, toward more discriminating tests. The attempt is being made in recent scales and tests, to test specific abilities rather than "general merit" or general ability.

III.

A. Ratings on the Thorndike scale for handwriting, on the basis of the experimental evidence contained in this study, are more variable than ratings on the Ayres scale.

B. On the other hand, the Ayres scale does not include specimens so low in quality as some samples of writing from the third grade.

C. From the two preceding tentative conclusions, it follows that the Ayres scale is the better of the two for use in grades 4-8, while the Thorndike scale is the better scale for use in the grades below the fourth.

IV.

The data of this study show, in so far as they are reliable, that success in developing in pupils such a specific ability as that which the Courtis tests measure is not necessarily associated with a high degree of General Teaching Ability.

The following conclusions, based upon an intensive study of two city school systems, support the above inference:

A. A high negative correlation exists between the improvement of pupils in the work of the Courtis tests and the ratings of corresponding teachers on the rating form.

B. A negative correlation exists between the improvement of pupils in the work of the Courtis tests and the superintendents' ratings of the corresponding teachers in General Teaching Ability.

C. A high negative correlation exists between the im-

provement of pupils in the work of the Courtis tests and the improvement of the same pupils in handwriting.

D. Mechanical arithmetical example cards can be used to advantage in increasing the pupil's ability in solving the Courtis arithmetic examples, while it may be seriously questioned whether the extensive use of such advice denotes General Teaching Ability.

E. The correlation between the improvement of pupils in the work of the Courtis tests, and the ability of corresponding teachers to solve the examples of the same tests is 0.62. The natural conclusion from this correlation is that the teacher who is very proficient in such specific work as that included under the Courtis tests is likely to advance his pupils proportionately fast in the work of the same tests. This correlation in so far as the conditions in the two school systems tested were normal, indicates that the progress of pupils in the work of the Courtis tests is correlated with a very specific ability of the teacher.

F. A positive correlation (0.32) exists between the ratings of the superintendents and the ratings made on the form, and a higher correlation (0.46) exists between the ratings of the various persons using the form.

V.

A. When all of the (86) teachers personally visited are considered as one group, the correlation between form-rating and experience is negative, which seems to indicate that experience in teaching is most often accompanied by comparatively low teaching ability.

B. When the teachers are considered in five groups, however, on the basis of number of years of experience (1-5, 6-10, 11-15, 16-20, and 21-28) the group which has had (6-10) years experience is rated highest.

C. The median number of years experience of the various groups of teachers, when they are grouped on the basis of training, show that, in general, those teachers who have had little training in preparation for teaching have had more experience than the teachers who have had more training.

D. The normal school graduates, probably the best trained group for teaching in the elementary schools, have had very much less experience in teaching than any other group.

The facts contained in the four preceding paragraphs indicate that, in so far as the 86 teachers here considered is representative, training is more important than experience in determining the ability which the form measures.

Sixty-three per cent of the teachers in grades one and two are rated above the median on the form.

School children tend to write at a uniform rate, regardless of instructions.

The following conclusions are based on 32 Illinois superintendents' ratings of 458 teachers on the rating form:

1. The superintendent's estimate of his teacher's "total efficiency" is very closely correlated with his estimate of the teacher's General Teaching Efficiency.

2. According to the superintendents' ratings, teachers

are strongest in Speech and weakest in Skill in Directing Habit-Formation.

3. The median number of years experience of Illinois elementary teachers in the towns and small cities, based on the returns from those investigated in this study, is just eight years.

4. The experience of teachers is positively correlated with the superintendent's estimate of them in General Teaching Ability, and is somewhat more closely correlated with his rating of them in Governmental Skill. This probably indicates that experience is a factor in determining Teaching Ability and a more important factor in determining Governmental Skill, as estimated by the superintendent.

5. The superintendent's estimate of General Teaching Ability in teachers is somewhat less closely correlated with the teachers' experience in the superintendent's own school system than with the teacher's total teaching experience. This probably indicates that the Illinois superintendent is not unduly influenced in his estimate of a teacher's teaching ability, by the fact that the teacher has, or has not, gained most of his experience in the superintendent's particular school system.

VI.

The ten-item rating-form presented in this study has been used satisfactorily by superintendents and by persons not connected with the school system.

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The following persons participated in the Conference and discussion which resulted in the selection of the ten items of the rating-form, substantially as formulated on the rating sheets and used throughout the investigation:

Professor W. C. Bagley, Director, School of Education, University of Illinois.

Professor L. D. Coffman, Dean, College of Education, University of Minnesota.

Professor C. H. Johnston, Professor of Secondary Education, University of Illinois.

Professor G. M. Whipple, Professor of Education, University of Illinois.

W. S. Miller, Margaret Cobb, and J. H. Hanger, Assistants in Education, University of Illinois.

Dr. H. O. Rugg, Instructor in Education, University of Chicago.

Dr. C. E. Holly, Assistant Professor of Education, Ohio Wesleyan University.

Simeon Bole, Student in Education and Associate in Horticulture,
University of Illinois.

Helen Clarke, Fellow in Psychology, University of Illinois.

A. J. Beatty, S. D. Huddelston, Marlee Lee and H. D. TerKeurst,
graduate students in Education, University of Illinois.

Geo..A. Brown, Manager, School and Home Education.

Principal Flanningham, Urbana High School.

Superintendent A. P. Johnston, Urbana Schools.

APPENDIX

Edward C. Elliott: Tentative Scheme for the Measurement of Teaching Efficiency.

INDIVIDUAL EFFICIENCY -- 800 points		Suggested values
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I.	PHYSICAL EFFICIENCY -- 80 points	(80)
	1. Impressions - general.....	10
	2. Health - general.....	20
	3. Voice.....	20
	4. Habits - personal.....	10
	5. Energy and endurance; power of relaxation.....	20
II.	MORAL - NATIVE EFFICIENCY -- 100 points	(100)
	1. Self control.....	20
	2. Optimism - enthusiasm.....	20
	3. Sympathy - tact.....	20
	4. Industry - sense of responsibility.	10
	5. Adaptability.....	10
	6. Sense of humor.....	10
	7. Judicial mindedness.....	10
III.	ADMINISTRATIVE EFFICIENCY -- 80 points	(80)
	1. Initiative; resourcefulness.....	20
	2. Promptness and accuracy.....	20
	3. Executive capacity.....	20
	4. Economy (time, property).....	10
	5. Co-operation (associates and superiors).....	10
IV.	DYNAMIC EFFICIENCY -- 160 points	(160)
	1. Preparation.....	20
	Including;	
	a. Intellectual capacity	
	b. Academic education	
	c. Professional training	
	d. Command and use of English	
	2. Professional attitudes and interest	10
	3. Human nature attitudes and interest (Appreciation of values - physical, intellectual, social and moral, in child life).....	10
	4. Instructional skill.....	80
	Including;	
	a. Definiteness of aim	

	b. Attention and interest of pupils	
	c. Formality vs. vitality of instruction	
	d. Motor vs. verbal methods	
	e. Application of the technique of teaching; organization and presentation of subject matter; the recitation as an artistic product	
	f. Application of the technique of living; participation and contribution of pupils; the recitation as a democratic activity	
	g. The tools and machinery of instruction; effective adaptation	
	h. Assignment of work	
	5. Governmental and directive skill.....	40
	(discipline)	
V.	PROJECTED EFFICIENCY -- 50 points	(50)
	1. Continuing preparation.....	20
	a. Daily; b. Weekly; c. Annual	
	2. The school program.....	10
	3. Increase of professional equipment (professional association, study and reading; travel).....	20
VI.	ACHIEVED EFFICIENCY -- 250 points	(250)
	1. Respect of pupils and community.....	30
	2. Leadership; stimulation of individuals and community.....	60
	3. School achievement	
	a. Illustrative results.....	80
	b. Examinations; rate and amount of progress of pupils.....	80
VII.	SOCIAL EFFICIENCY -- 80 points	(80)
	1. Intra-mural interests.....	20
	2. Extra-mural interests	
	a. Cultural and ethical.....	20
	b. Civic.....	20
	c. School - patrons.....	20
	Total Individual Efficiency	800

DIRECTIVE EFFICIENCY -- 200 points

Suggested
values

I. SUPERVISORY EFFICIENCY -- 200 points	(200)
1. Constructive criticism.....	40
2. Non-interfering supervision.....	40
3. Community encouragement.....	40
4. Professional confidence.....	40
5. Recognition of individuality.....	<u>40</u>
Total Directive Efficiency.....	200

THE BOYCE SCALE FOR RATING TEACHERS.

I. PERSONAL
EQUIPMENT ---

1. General appearance
 2. Health
 3. Voice
 4. Intellectual capacity
 5. Initiative and self-reliance
 6. Adaptability and resourcefulness
 7. Accuracy
 8. Industry
 9. Enthusiasm and optimism
 10. Integrity and sincerity
 11. Self-control
 12. Promptness
 13. Tact
 14. Sense of justice
-

II. SOCIAL AND
PROFESSIONAL
EQUIPMENT ---

15. Academic preparation
16. Professional preparation
17. Grasp of subject-matter
18. Understanding of children
19. Interest in the life of the school
20. Interest in the life of the community
21. Ability to meet and interest patrons
22. Interest in lives of pupils
23. Co-operation and loyalty

(Cont.) 24. Professional interest and growth

II. SOCIAL AND
PROFESSIONAL
EQUIPMENT ---

25. Daily preparation

26. Use of English

27. Care of light, heat and ventilation

III. SCHOOL
MANAGEMENT ---

28. Neatness of room

29. Care of routine

30. Discipline (governing skill)

31. Definiteness and clearness of aim

32. Skill in habit formation

33. Skill in stimulating thought

34. Skill in teaching how to study

IV. TECHNIQUE
OF TEACHING ---

35. Skill in questioning

36. Choice of subject-matter

37. Organization of subject-matter

38. Skill and care in assignment

39. Skill in motivating work

40. Attention to individual needs

41. Attention and response of the class

42. Growth of pupils in subject-matter.

V. RESULTS ---

43. General development of pupils

44. Stimulation of community

45. Moral influence

E. C. Witham:

Measuring Scale for Teacher Measurement¹

- | | |
|---------------------------|---|
| I. Morals | (+ Uplifting influence in others
(a Upright but not influential
(- Questionable character |
| 2. Leadership | (+ Among students and in community
(a Among students only
(- Lacking |
| 3. Personality | (+ Magnetic
(a Not magnetic but able to command respect
(- Too quiet or too talkative |
| 4. Personal
Appearance | (+ Commanding. Well dressed
(a Clean - not very good taste
(- Untidy, undignified |
| 5. Ideals | (+ Of an idealistic temperament
(a Narrow
(- Lacking |
| 6. Education | (+ College education
(a High School
(- Grammar school |
| 7. Travel | (+ Over 1000 miles from place of birth
(a 500 to 1000 miles from place of birth
(- Less than 500 miles from place of birth |

¹Only seven of the forty-six items of the Witham scale are included here. The others are omitted on account of space.

The writer graduated from the University of North Carolina in 1910, with the Degree of Bachelor of Arts, and received the degree of Master of Arts in Education at the same institution in 1914. He has been a Graduate Student in Education at the University of Illinois, 1914-1916, and a Fellow in Education, 1915-1916. His three years of experience in school work have been distributed as follows: Principal Pine Mountain School, (Durham, N.C.) 1910-1911; Principal Haw Fields High School, (Mebane, N.C.) 1912-1914. Aside from numerous book reviews, he has published during the past year the following: State Conditions for High School Work. Educational Administration and Supervision, March, 1915. Pp.216-220.

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